

THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metals.

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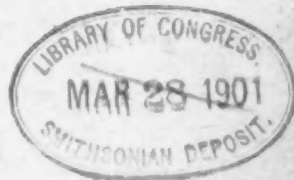
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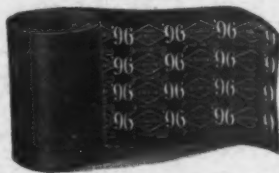
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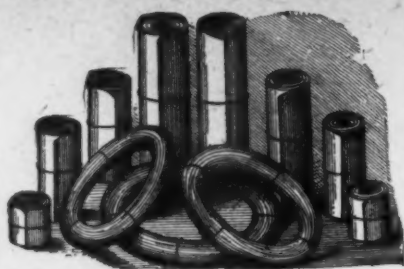
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THE IRON AGE

THURSDAY, MARCH 28, 1901.

The Thornycroft Steam Wagon.

The Thornycroft Steam Wagon Company of America, 97 Cedar street, New York, are now building steam wagons for heavy duty in accordance with designs by the eminent engineer, John Isaac Thornycroft. A great many wagons have been built from these designs in England, and they are largely used in that and other foreign countries.

The wagon is particularly intended for carrying heavy loads, and in its structure is of ample strength, while the power with which it is provided is sufficient for uncommon grades at full loads. The mechanism is particularly noticeable for its extreme simplicity, the

long, the tread being 5 feet 6½ inches from center to center of the tires. The wagon has a carrying capacity of 4 tons at a speed over ordinary roads of 6 miles per hour. The general construction and arrangement will be understood from Figs. 1 to 4, which show, first, a half-tone engraving of the wagon itself, a side elevation, plan, and cross section of the frame.

The Engine.

A view of the engine detached is presented in Fig. 6, while Fig. 5 is a section through the low pressure cylinder and valve chest, and also presents in elevation the valve gear, which is of the constant lead radial type. The engine is suspended from the frame from three points in such manner as to be relieved from strains due



THE THORNYCROFT STEAM WAGON.

ease with which it can be handled, and the absence of any feature that might tend to cause breakage and consequent incapacity. Strength of parts has been provided to a degree which would, at first glance, seem to be excessive, but the designer evidently had in mind that it was advisable to err on the safe side. Many original features of the design will be noted in the accompanying drawings and as we progress with the description.

The vehicle consists of a heavy channel iron steel frame from which the engine and transmission gearing are suspended, and which rests upon the wheel axles. The rear portion is taken up with a platform which measures inside 12 feet ½ inch in length by 5 feet 7½ inches in width. The forward portion is occupied by the cab, within which is the boiler, controlling levers, water tank and ample accommodation for the engineer. As a whole the wagon measures 17 feet 6 inches over all by 6 feet 6 inches in width, the extreme height from the ground to the top of the smoke stack being 8 feet 6 inches. The wheel base is 9 feet 11 inches

to any winding or distortion which may occur in the frame. It is a horizontal compound reversing; with cylinders 4 inches and 7 inches diameter by a stroke of 5 inches, and is entirely inclosed in a dust proof and oil tight case, which allows of the splashing method of lubrication.

The valves are of the balanced cylindrical pattern. The valve gear will be understood by consulting the right hand portion of the drawing, Fig. 5. The eccentric carries an arm, C, which is attached to the valve rod by a link. It is also connected to the swinging link A B, which, in the position indicated by the dotted lines, moves the vehicle ahead. Swinging the end of this link around and downward to the position marked "astern" reverses the direction of travel of the wagon. At the intermediate point the action is, of course, nil. While serving practically the same purpose, the gear is simpler and contains fewer parts than the ordinary link.

At 440 revolutions per minute 20 brake horse-power are developed. When the low speed gear is in use and

the revolutions run up to 770 per minute the effective brake horse-power is 35. For the power developed the motor is exceptionally light, weighing under 500 pounds, and measuring only $3\frac{1}{4} \times 2\frac{1}{2} \times 1\frac{1}{2}$ feet.

The engine can be disconnected from the driving gear and may then be employed for driving any machinery.

The Boiler.

The boiler consists of an annular upper and lower drum, which are connected by tubes, as shown in Figs. 7, 8 and 10. It is centrally fired through an opening in the top. Although the vertical tubes entirely surround the fire, they are preserved from direct contact with the fuel, which is carried in the lower drum. Baffle plates extend about one-third the circumference of the boiler and prevent the direct escape of the gases, which have to find their way on all sides through the narrow spaces

at 5 pounds above the working pressure discharges invisibly and silently from the funnel. The other, set to a pressure 10 pounds higher, blows directly into the air in full view of the engineer, and thus at once draws his attention to the excessive pressure should he fail to per-

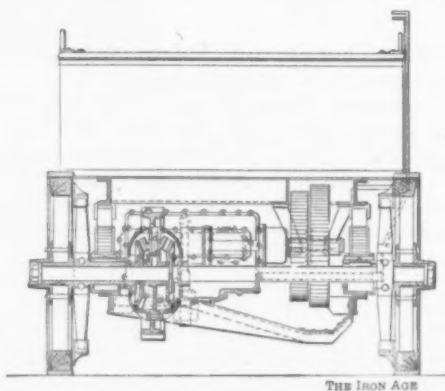


Fig. 4.—Cross Section.

ceive the first. The boiler is fed by a pump driven direct from the engine shaft by worm gearing, and any excessive water is returned to the feed tank by hand regulation. The suction and delivery valves of the pump are

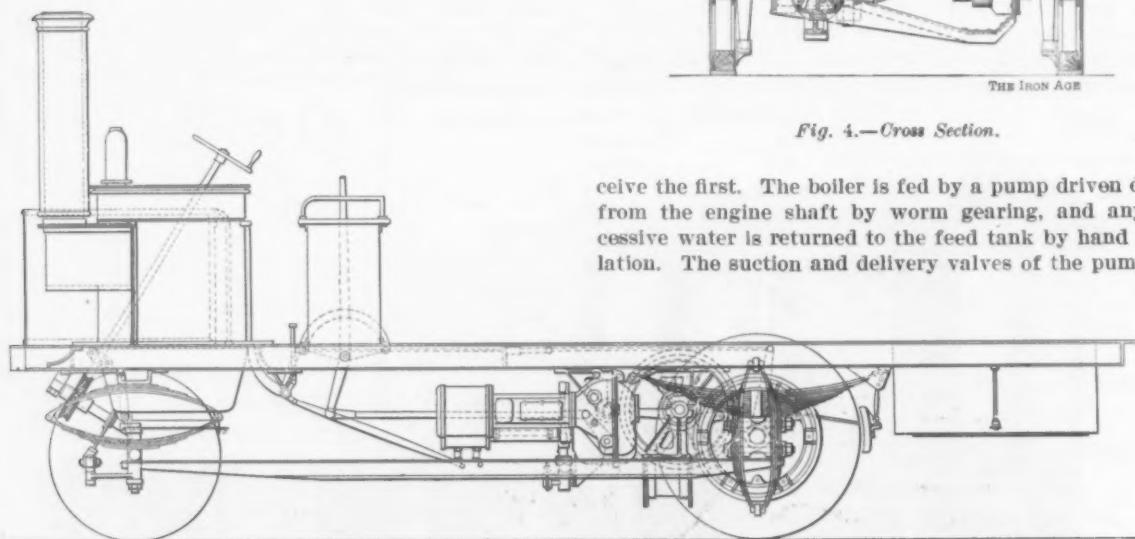


Fig. 2.—Side Elevation.

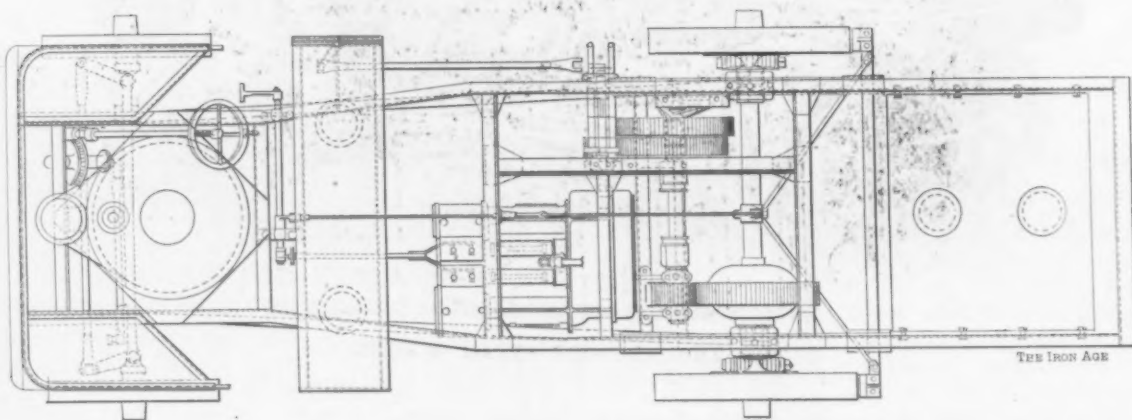


Fig. 3.—Plan

THE THORNYCROFT STEAM WAGON.

left between the tubes. The fire is regulated by a vertical damper in the ash pan and also by the lid covering the fire door in the top. The necessary draft is created by the exhaust. Convenient and ample cleaning arrangements are provided through an opening in the bottom drum. Easy and rapid internal examination of the boiler is provided by the very light top and bottom covers, which are formed with special steam joints. The tubes can be readily cleaned inside and out, and when necessary the boiler can be retubed without removing it.

The heating surface is 83 square feet, the grate area 2.4 square feet. The working pressure is 175 pounds per square inch, and the test pressure 350 pounds per square inch.

Two safety valves are furnished, of which one set

instantly accessible. The auxiliary feed is by a self starting injector so designed as to permit of the cones being withdrawn and examined while the boiler is under steam.

Change Gears.

The gearing between the engine and driving axle is indicated in Fig. 9. These have ratios of 10.1 and 10.17 to 1, although on good roads grades of 1 to 12 can be mounted with the high speed gear. On occasions when greatly increased driving effort is demanded the slow speed gear is used. These gears are changed from the side of the wagon by means of the lever S. When this lever is in position indicated by the full lines the low speed gears M N are in mesh. When the lever is moved to the right and in the position indicated by the dotted

lines the gears K L are in engagement. The pin R is employed to lock the lever in the desired position.

Method of Driving.

The method of driving the rear axle and also the peculiar construction of this axle will be understood from the sectional view, Fig. 13. A differential gear of the usual construction, but not mounted in the usual way, is shown. The bevel gear C, forming the right

axle—in this case $3\frac{1}{2}$ inches in diameter—made in one piece. The trouble arising from the usual form of two-part axles is therefore obviated. Resting upon the axle are the bolster blocks F G, carrying the wagon frame.

The Driving Wheels.

The driving wheels are 3 feet 3 inches in diameter, with tires $5\frac{3}{4}$ inches wide. Carried upon the axle thus described is a grip lock, C, Figs. 11 and 12, provided

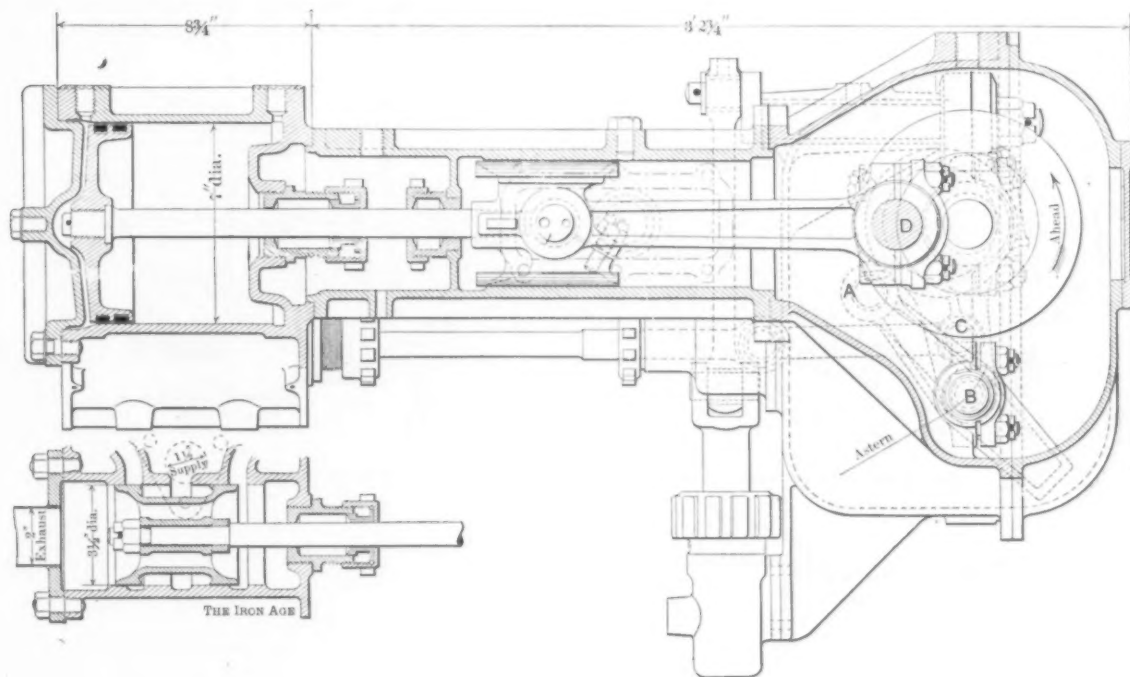


Fig. 5.—Section through Low Pressure Cylinder and Valve.

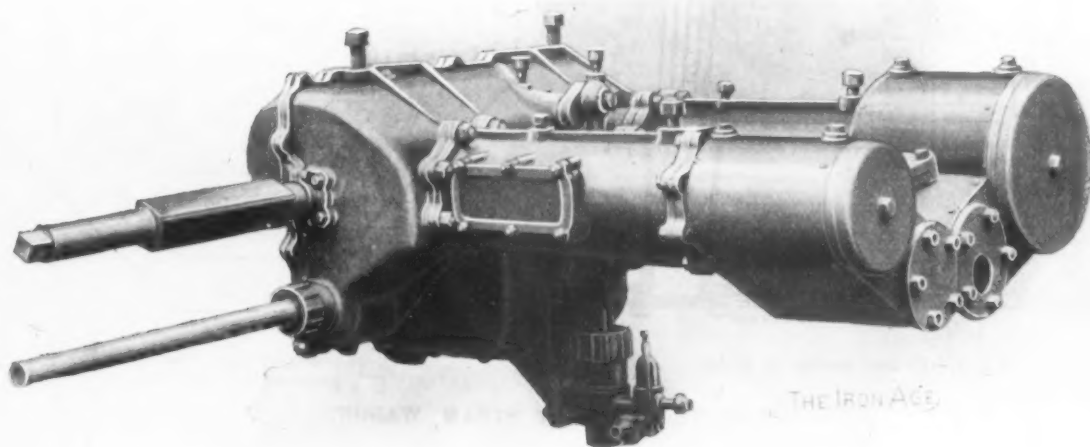


Fig. 6.—Engines.

THE THORNYCROFT STEAM WAGON.

hand portion in the differential, is mounted rigidly upon the right hand portion of the axle and drives the flat springs E, shown in the elevation in Fig. 12, which are directly attached to the wheels, as will be explained later. The bevel gear B is rigidly mounted upon a shell, in which the axle fits, and which carries at its outer end another pair of leaf springs, which drive the opposite wheel X. Both wheels are mounted loosely upon the axle, so as to be driven directly by the springs. This construction permits of the use of an unusually heavy

with a pair of leaf springs extending nearly to the felloes. Each wheel carries attached to its felloe at the top and bottom, as shown in the drawings, two angle plates, D, provided with an inwardly projecting lug which enters between the ends of the springs. The revolution of the axle B has no effect whatever to turn the wheel, except through the power transmitted by the springs to the lug on the felloes. The result is an exceedingly elastic connection. The power is applied when the circumference of the wheel and the spokes are re-

lieved of all strains except those arising from the dead load.

The front or swing wheels are 2 feet 10 inches in diameter, with tires $4\frac{3}{8}$ inches wide. The swing gear is shown in Fig. 14. The swing bar F is provided with a pilot wheel located just in front of the engineer. At its lower end it carries a worm in engagement with the worm gear K. The worm shaft carries the lever L, to

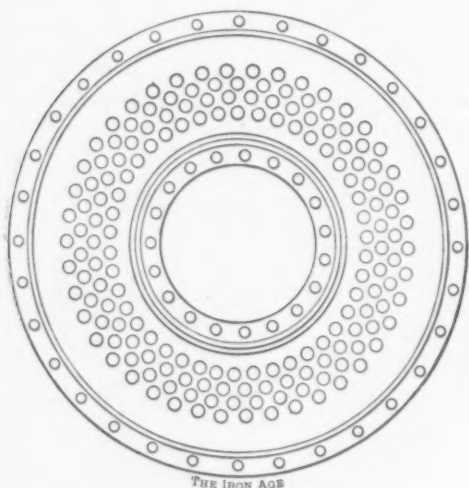


Fig. 7.—Top Tube Sheet of Boiler.

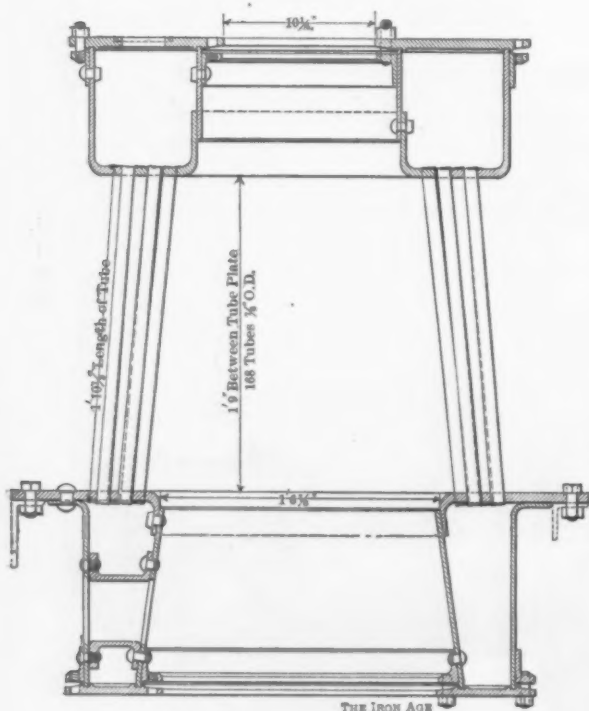


Fig. 8.—Vertical Section of Boiler.

An English Journal on the Steel Consolidation.

The London *Engineer* makes the following curious comments on the United States Steel Corporation:

The situation is one without precedent. The conditions are such as no political economist has ever dreamt of as possible. The Trust will be able to manufacture over 12,000,000 tons of pig iron every year, and at least three-fourths of all the steel used in the United States. It has been plainly stated that Mr. Morgan will not rest content until he holds every iron mine and every blast furnace in the United States. Let us suppose for a mo-

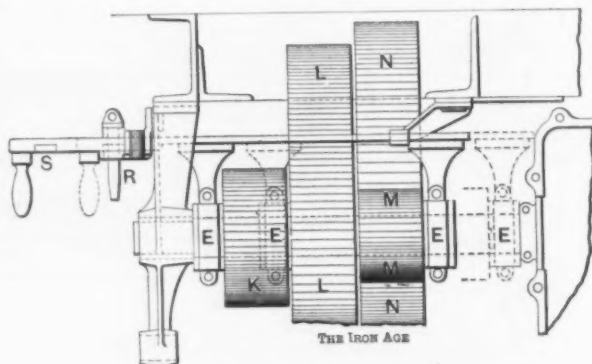


Fig. 9.—Change Gears.

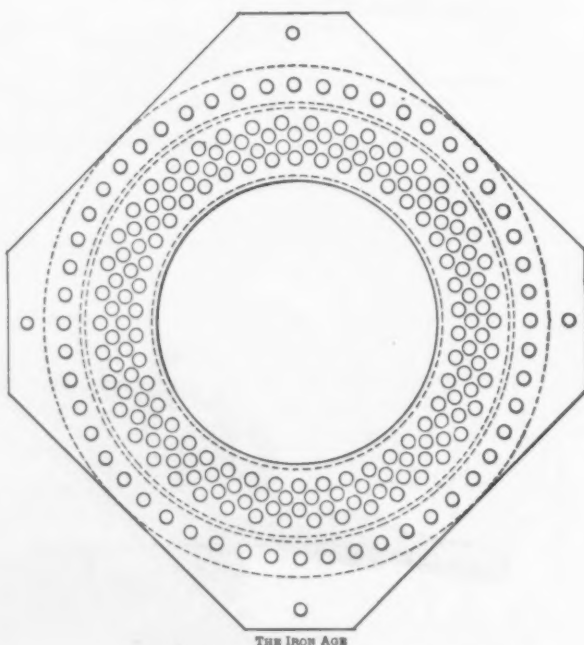


Fig. 10.—Bottom Tube Sheet of Boiler.

THE THORNYCROFT STEAM WAGON.

which the rod E is connected and which is joined through the bar A to the axle. Each axle, B, is provided with a cross bar, which is vertically carried in the yokes A A.

Results.

The writer recently had the privilege of riding in one of these wagons at the works of the company in Paterson, N. J. What was particularly impressive was the ease with which the heavy machine was controlled and the absence of all noise either from the exhaust or moving parts. Further than this, there was absolutely no smoke, although the engine was fed with soft coal.

The Pensacola Dry Dock & Shipbuilding Company have been incorporated with a capital of \$800,000 at Tallahassee, Fla.

ment that the whole iron and steel producing power of the United Kingdom, with over 500 blast furnaces, was in the hands of a single individual, and we shall have a case nearly analogous to that presented to a gasping world by the United States Steel Corporation.

What will be the result? As matters stand Mr. Morgan and his immediate partners can fix the price of iron and steel. They are, for the moment at all events, beyond the fear of competition. They can have no competitors in their own country. The American consumer is absolutely in the hands of the Trust. They can have no European competitor, because the tariff defends them. A combination of the kind, indeed, could only come into existence under the fostering aid of protection. We need not deal with the question of the sale of the surplus production in Europe. Our own ironmasters are

fully alive to the danger. But, all men ask, Can this gigantic monopoly continue to live? The reply is that there are four dangers it incurs. Let us consider what they are.

In the first place, there is evidence to show that those

American people have shown before now that, although long suffering, they arise in their might now and then, and a good deal of slaying generally follows. Mr. Morgan may find some day that he has raised the price of iron and steel just a little too much, and there will be

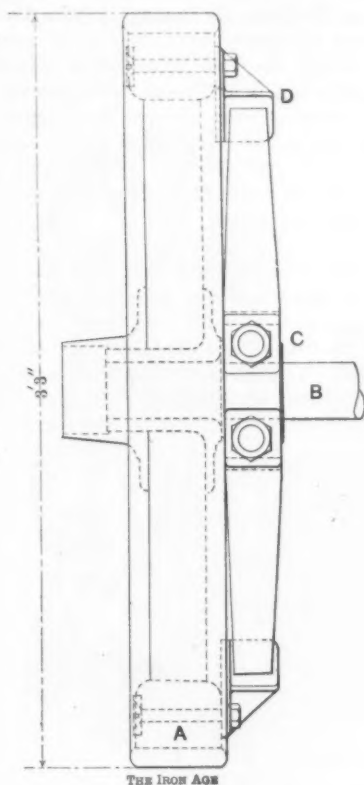


Fig. 11.—Elevation of Fig. 12.

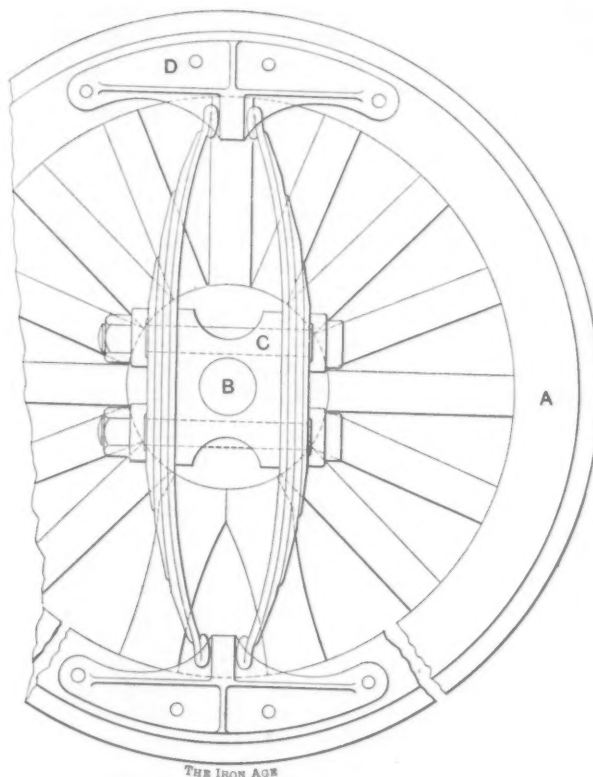


Fig. 12.—Face View of One Driving Wheel.

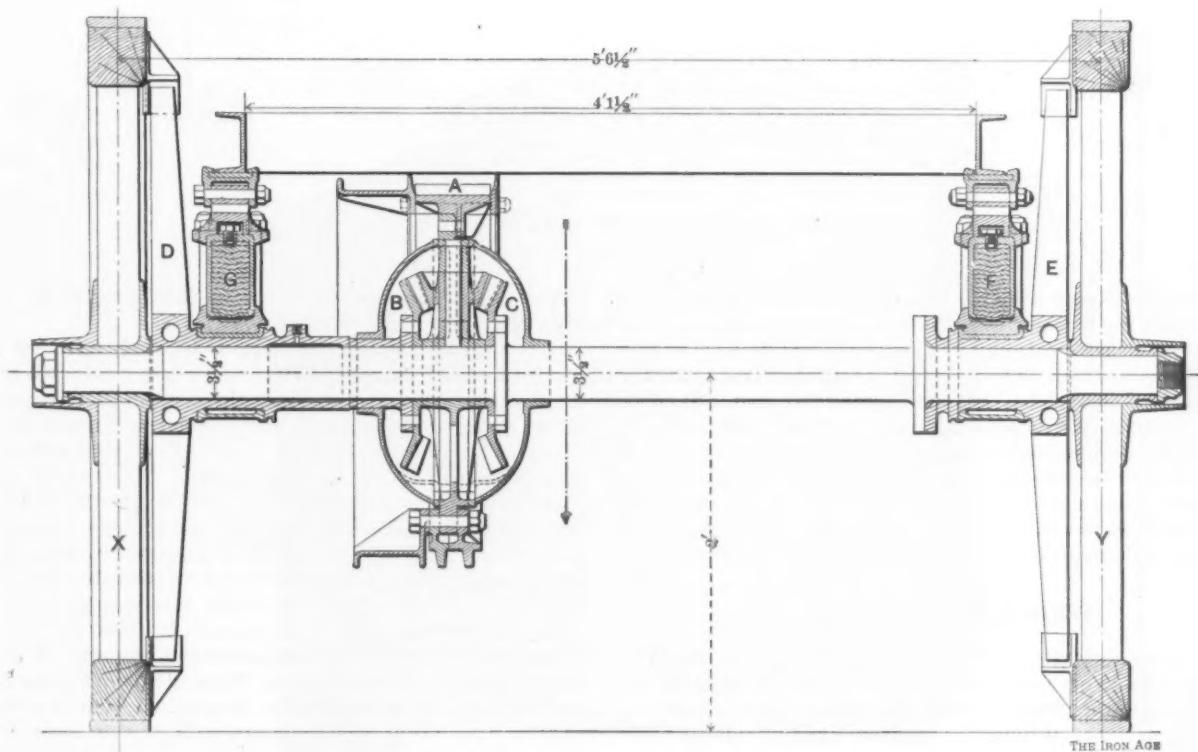


Fig. 13.—Sectional Elevation through Rear Axle.

THE THORNYCROFT STEAM WAGON.

manufacturers, shipbuilders and railway companies to whom plenty of iron and steel at moderate prices is essential are by no means indisposed to take action against Mr. Morgan and his fellows. There is an unusual outcry heard in favor of free trade. No doubt the Steel Trust possesses enormous political power; but the

an end to the Steel Trust. But apart from this, he will have to reckon with a powerful political party which is resolutely opposed to monopolies of any kind. This party will have to be silenced, in any case a difficult matter, and certain to be very expensive. In the second place, Europe, including Great Britain, may, and prob-

ably will, put a countervailing duty on American iron and steel. This would set a complete stop to the sale of surplus metal, and would leave the Steel Trust dependent upon the home markets, which would not, we think, at all suit Mr. Morgan. In the third place, a prominent feature in the policy of the Trust is the concentration of management. At present numbers of very clever, able men are managing the various works all over the country included in Mr. Morgan's net. All these men will be dismissed. Already, we understand, bitter feelings of hostility exist; and Mr. Morgan will find that men who know as much both of manufacture and finance as do these ex-managers can be exceedingly dangerous if they choose. Lastly, he will have the labor problem to deal with in a very aggravated form. It is said that no unions exist in the United States that can equal in power those of Great Britain. On the other hand, it must never be forgotten that, when labor does rise against capital in the United States, the consequences are serious and even dreadful in a way fortunately unparalleled in this country. The situation is, indeed, very threatening for multitudes of workmen. It is obvious to them

Toronto, vice-president; William A. Rogers, general manager.

A. E. Ames & Co. of Toronto, acting as representatives of William A. Rogers, Limited, have offered \$290,000 of preference stock, 7 per cent. cumulative.

The relations of William A. Rogers of New York and the Niagara Silver Company have been of a most intimate character during the past three years, so much so that their amalgamation is a natural development. The Niagara Silver Company were started in Niagara Falls in 1893 and have grown steadily since their commencement. Last year a branch factory was established in New Bedford, Mass., in order to meet the increasing demand for the company's goods.

The business now carried on by William A. Rogers was begun in 1890, but in 1895 he began the sale of silver plated ware and since that time has devoted himself entirely to the sale of that quality of goods. The firm of Clarkson & Cross have examined the books and accounts of William A. Rogers of New York and the Niagara Silver Company of Niagara Falls for the last three years, and certify that, after deducting all ex-

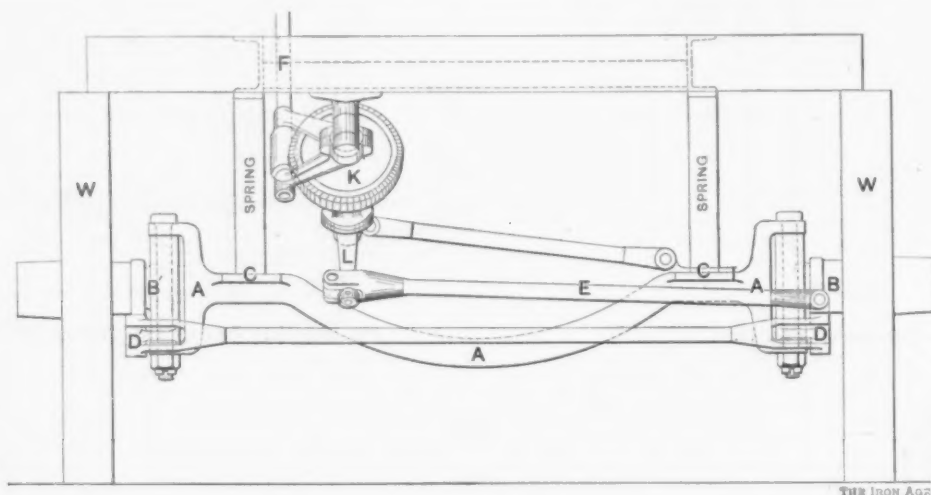


Fig. 14.—Steering Gear.

THE THORNYCROFT STEAM WAGON.

now, or it soon will be, that Mr. Morgan can not only dictate the price of iron and steel, but the price of labor as well. The probability is that combination will be met by combination. The spirit of the age is wholly against gigantic monopolies, and with it Mr. Morgan will have to reckon. We do not shut our eyes to the presence of a danger; but we believe that it can be overcome. Yet it seems to be almost certain that the formation of the Steel Trust may profoundly modify the conditions under which the world's trade is carried on, and may drive even Great Britain to fly to protection in self defense.

William A. Rogers, Limited.

A consolidation of the business interests of William A. Rogers of New York City and the Niagara Silver Company of Niagara Falls has taken place under the firm name of William A. Rogers, Limited. Both firms have been engaged in the manufacture and selling of silver plated ware. The firm of William A. Rogers, Limited, has been incorporated under the Ontario Companies act with a capital stock of \$1,350,000. The directors are Samuel J. Moore of Toronto, Ont.; A. E. Ames of A. E. Ames & Co., bankers, Toronto; Hon. W. Caryl Ely, president of the International Traction Company of Buffalo; Robert Kilgour, vice-president of the Canadian Bank of Commerce of Toronto; James L. Morrison, president of the Niagara Silver Company of Toronto; Hon. Charles H. Duell, Commissioner of Patents, Washington, D. C.; William A. Rogers of New York. The officers are S. J. Moore, Toronto, Ont., president; A. E. Ames of

penses, the annual profits were in 1898, \$35,113.03; in 1899, \$58,928.62; 1900, \$79,352.20.

The firm of William A. Rogers, Limited, have been formed to carry on the business heretofore conducted by the two concerns. For the past three years the Niagara Silver Company have found it necessary to furnish Mr. Rogers with more than 75 per cent. of their total output. In a letter written by S. J. Moore to A. E. Ames & Co. that gentleman says that the continued growth of the business made it necessary to still further increase manufacturing facilities, and that it is proposed to add one or two other lines to those already manufactured and to increase the buildings and plants for this purpose.

Of the \$600,000 of preference stock, \$310,000 has been issued for the purpose of acquiring the property of the silver ware department of the Niagara Silver Company and the property of William A. Rogers. A sum approximating \$100,000 in cash from proceeds of this issue, together with common stock in William A. Rogers, Limited, is necessary to complete this transaction. The company will have in manufactured goods, goods in process of manufacture and raw materials on hand upward of \$200,000. It will also have upward of \$150,000 in cash available for the further extension of the business.

A New Wind Mill Plant.—The Stover Mfg. Company, Freeport, Ill., have purchased 21½ acres of land in East Freeport, and will erect a new wind mill plant. At an early date a force of men will be put to work on the foundations and construction will be rushed so that it will be ready for business by fall. The plant will be

used exclusively for the manufacture of wind mills and will be one of the largest and most complete manufacturing plants of the kind in the West.

The Barth Electric Elevator.

The Barth Mfg. Company of Milwaukee, Wis., have brought out an electric passenger or freight elevator

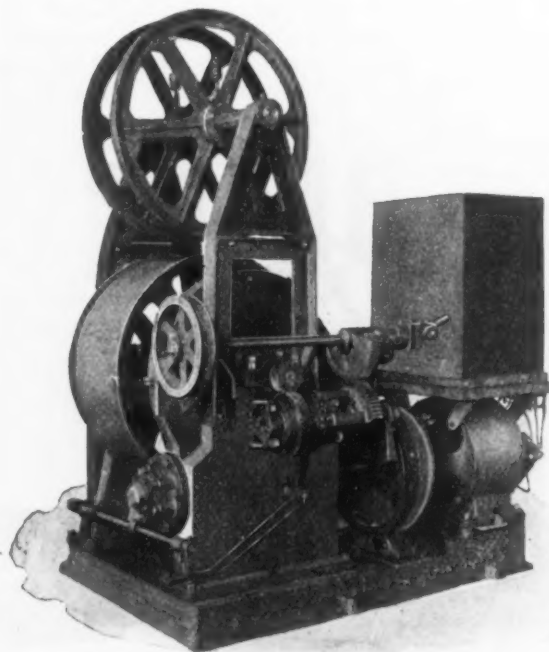


Fig. 1.—The Elevator.

This is important, as the elevator is starting almost continuously. The brake is so designed as to get an easy stop at the intermediate floors and an automatic stop at the terminal landing. This is accomplished with the assistance of an auxiliary brake, which insures a positive stop free from jolting.

The worm is a solid steel forging and runs in long babbitt bearings. The worm wheel is made of bronze metal; it is accurately hobbled to fit the worm, and is also keyed to the drum shaft and bolted to the drum, which removes all torsion from the drum shaft. The worm and gear are inclosed in an oil tight housing filled with oil. The thrust is taken up on ball bearings. The drum is of cast iron, turned and grooved for the requisite number of cables. All parts of the machine are mounted on a heavy cast iron bed plate, cast in one piece. The slack cable stop is so arranged that in event of the car meeting with an obstruction in its descent the machine will immediately stop. All cars are provided with the most approved safety appliances.

The controller is simple in construction, with all parts easily accessible. It regulates the flow of electricity to the motor and is at all times under full control of the operator in the car, who can vary the speed from maximum to minimum without decreasing the efficiency. The design is such that, in starting, the armature resistance cannot be cut out until the switch is closed, and the same resistance is again inserted before the main switch goes out. All contacts are double pole of the quick make-and-break type. It has no solenoids or magnets to consume current or burn out, and no air dash pots to cut and hang up. All parts are positive in their operation. When the elevator is stopped no current is on the motor, both sides of the line being open.

The works of the Youngstown Specialty Mfg. Company, at Youngstown, Ohio, makers of tin cans and tin-

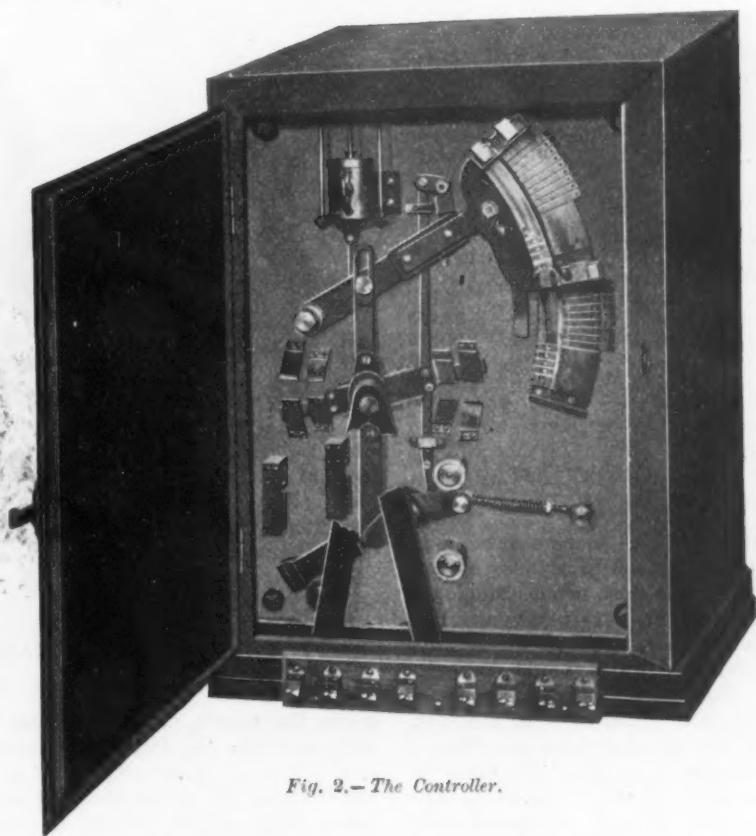


Fig. 2.—The Controller.

THE BARTH ELECTRIC ELEVATOR.

and controller, in capacities from 1 to 10 tons. The motor is heavy and built to withstand the hard usage of elevator service. It is of the variable speed and multipolar type, and has great starting torque, thus allowing it to start quickly under full load with small current consumption, thereby avoiding overloading of the motor.

ware specialties, have been taken over by the new tin can combine. It is said that other tin can works at Cleveland, Conneaut and other places will be removed to Youngstown and this place will be made a center for the manufacture of tin cans owing to its facilities for receiving and shipping material.

Pacific Coast News.

SAN FRANCISCO, CAL., March 18, 1901.—Business activity is still the order of the day, and all our metal and machinery houses have quite as much as ever they can do. Some of them, with a couple of hundred employees each, find that it is all they can do to get through their work in the working hours. Indeed, some of the employees, and those the principal ones, do not get through their work occasionally till far in the night. And what with work and banquets they have a pretty lively time of it. The other evening the millionaire representatives of Chicago trade were given a banquet and entertained right royally. It pays to-day to know San Francisco and its trade. Our citizens are beginning to wake up to their great opportunities—in fact, every eye is turned to the Orient—and all are anxiously awaiting the conclusion of the trouble in China and the Philippines. In fact, it is only necessary to look at a good map of the latter to see what a grand opening there will be for American trade. There are hundreds of islands with thousands of ports and harbors, and the country nigh each one of these is capable of producing sugar, hemp, rice or some other article of commerce, or has in the mountains valuable forests of timber and mines of the precious and other metals. Hundreds of trading stations will arise, with all of which we can have some trade. Indeed the Philippines are among the richest groups of islands on the face of the whole earth, and as their people want almost everything in the shape of tools and agricultural and other machinery, they will naturally enough come here to get them. And San Francisco will become one of the most important hardware and metal markets on the globe. I have already sent you details of the exports of goods of this character to the Hawaiian Islands, and now do the same for China and Japan:

	China.	Japan.
Bicycles	\$8,400	\$93,321
Watches	7,950	190,151
Instruments, scientific.....	16,717	90,683
Castings	9,540	62,111
Firearms	3,380	18,336
Typewriters	6,033	11,245
Sewing machines.....	950	332
Tools	1,184	13,692
Boilers and parts of.....	2,050	4,040
Machinery	63,285	249,675
Safes	130	879
Cash registers, \$.....	150	....
Stoves	5,080	1,209
Steel rails.....	11,500	7,371
Nails (1,650 kegs China, 71,683 kegs Japan)	5,070	211,035
Wire (201,068 pounds China, 2,611,736 pounds Japan).....	7,080	75,870
Hardware	19,769	38,758
Saws .....	....	1,814
Pig iron.....	....	2,800
Steel plates.....	....	3,450
Cutlery .....	....	1,500
Pumps .....	....	16,313
Pipe .....	....	44,648
Scales .....	....	4,680
Agricultural machinery.....	....	14,604
Totals.....	\$166,268	\$933,517

It will be seen that Japan has increased her purchases from us to almost \$1,000,000 in articles of this description shipped through this port, while China has lagged behind in the race. Japan buys principally machinery, watches and nails; these forming about two-thirds of the whole. Here the watches and the nails are all of Eastern manufacture, but much of the machinery is from San Francisco. Most of it is, however, from the East. Most of the other articles are also of Eastern origin, and are shipped in transit. The same remarks will apply to the articles shipped to China, though they are comparatively small in value compared with those intended for the realm of the Mikado. The Chinese business has, of course, been limited in volume on account of the war, and it may be expected to increase largely during the present year. The nail trade to Japan, which had fallen off, has revived again. It can easily be seen that there is room for a great increase in many of the articles given here, and which are now of comparatively so small value.

J. O. L.

The Krummel Rotary Engine.

The accompanying illustrations represent an engine of the rotatable piston type invented by Louis C. Krummel of Chicago. The piston revolves freely around the shaft and thus rolls along the interior surface of the cylinder. The valve oscillates and one edge of it is always pressed against the piston by the action of the steam upon the valve wing. The valve is entirely automatic in its action and no links are required to keep its edge engaged with the piston. If a reverse motion is desired, the throttle lever is thrown over to the other side; steam is then admitted through what was the exhaust port and the valve is thrown forward so that the left edge en-

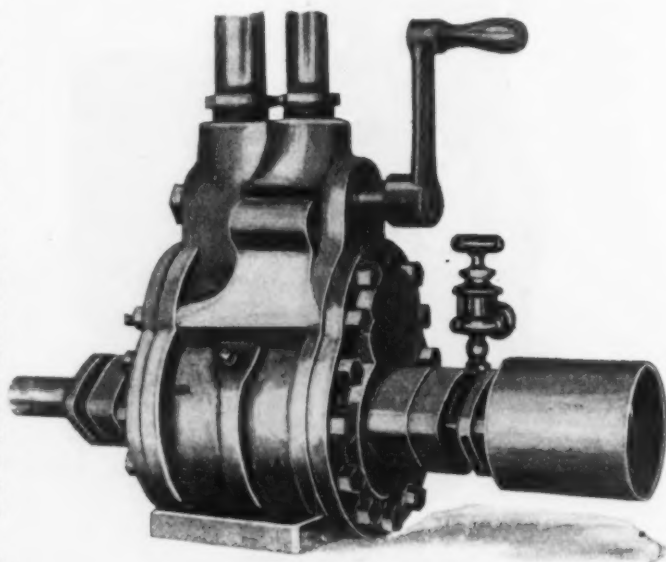


Fig 1.—The Engine Complete.

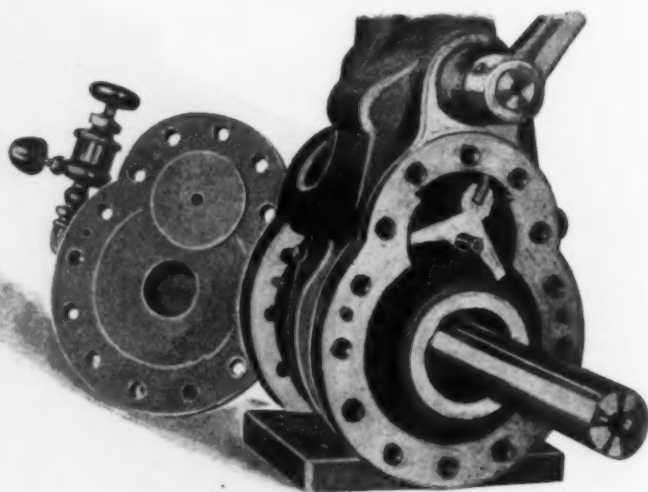


Fig 2.—View with Cap Removed.

THE KRUMMEL ROTARY ENGINE

gages the piston. The oscillating or rocker valve not only performs the function of separating the pressure space from the exhaust space by two steam tight joints, but it opens and closes the inlet and exhaust ports, the latter being opened slightly in advance of the former. It is easily observed that the pressure when acting upon the valve is always balanced, thus giving it an easy and free motion. The throttle valve is built on the four-way principle. It thus allows the steam to enter on one side to the inlet ports, while the exhaust discharges from the outlet ports to the exhaust pipe. By a simple movement of the lever these conditions can be exactly reversed, so that the engine runs backward instead of forward.

No difficulty is experienced in keeping the engine steam tight, as, on account of the peculiar motion of the rotatable piston, the relative speed between its ends and the cap or end walls is small, and as no pressure is exerted here, the wear is reduced to a minimum. The rotatable piston precludes any scraping on the cylinder wall; in fact, high speed is favorable for such pistons.

The oscillating valve, having hardened steel trunnions, does not bear hard against the valve chamber walls, and ample provision is had for taking up any end wear, which in any case can only be slight, no end pressure being introduced. As an extra precaution against leakage the piston has a tightening ring, which is forced against the cap walls by springs. The steam is lubricated before it enters the engine and a slight amount is allowed to enter the inside of the piston; thus all parts are sufficiently oiled. A slight packing on the shaft near the inner end of the journals prevents any escape of steam from the interior of the piston.

Two of the engines as described have been in successful operation for over a year, one from which the illustrations were taken, and another on the same prin-

Southern Pacific to the East, instead of their going via Panama and the Columbian line to New York. Still, European freights are relatively a little lower than American.

Reconstruction on the Guatemala Northern goes on steadily; new rails and culverts have been placed all along from Rancho, San Agustin, to Zacapa and Gualon. The bridge of Zacapa has been repaired after the heavy floods, and the new Matagua Bridge is to be in place and working order within a few weeks. When the line has been completely repaired as far as Port Barrios on the Atlantic, then the Central and Pacific sections will be pushed to a finish. Of course everything has to be done on said sections, nothing besides the preliminary surveys having ever been done. A great deal of bridge work will be needed between San Agustin and the capital, Guatemala City, as the difference of elevation (between sea level and 4500 feet) and the numerous mountains and rivers on this route would make evident. It is expected that the company who have taken over this line and the old one will have to spend between \$3,000,000 and \$5,000,000 before the through line is completed.

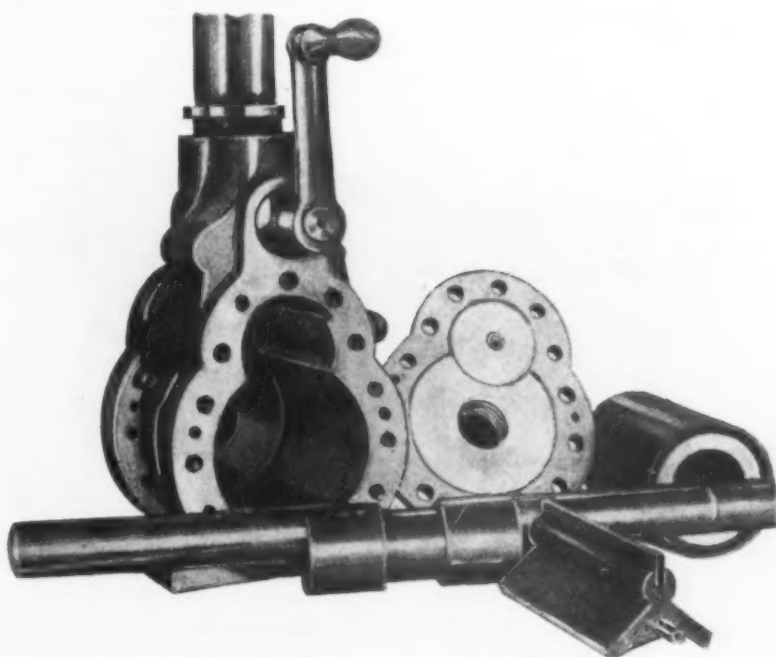


Fig. 3—Various Parts of the Engine Separated.

THE KRUMMEL ROTARY ENGINE.

ciple, compounded. The advantage of the latter mentioned type is that it can be started at any part of the stroke. Provisions are also made, if desired, so that full pressure can be admitted into both cylinders, and by the mere turn of a handle the cylinders can be compounded. In the case of slow running stationary engines attachments are made so that steam can be cut off at any part of the stroke, thus allowing the full advantage to be gained by expansion, the degree of which can be readily altered while the engine is in motion.

Central American News.

SAN JOSE, C. A., March, 1901.—Our business firms will scarcely be able to complain of the want of freighters to and from Central American ports nowadays, for competition has become very brisk in this line. The Kosmo-German Steamship Line has been followed by the British Pacific Navigation and the Chilean Packet lines, all of which are running directly or otherwise from Liverpool, Hamburg and London, through the Straits of Magellan up the Pacific Coast of South America, touching at most of the Central American and Mexican ports to San Francisco, Cal. The Pacific Mail, who are the ones to bear the brunt of this competition, have already reduced their rates one-half, sending all their North bound freight via San Francisco, and the

If, as is confidently expected, this line is built within two years, it will be the first from ocean to ocean across Central America. This will shorten the route from New York to San Francisco some five or six days; and freight which has been traveling down the Pacific to Panama or the Straits of Magellan will then cut straight across Guatemala and save thousands of miles. It would certainly be of the utmost advantage to American commerce if another reciprocity treaty could be signed (on the lines of the justly celebrated Blaine treaties) between the United States and the Central American Republics. During the last eight or ten years a vast demand has grown up here for American goods, especially in hardware and building materials. While the Blaine treaties were in force the natives were able to appreciate the great difference between our manufactures and the very cheap imitations coming from Germany, Belgium and England. On the other hand, we lost nothing; the only commodities we let in free of duty were coffees, mahogany and tropical fruits, for, although these countries raise sugar and the chocolate bean, there is little or none for export as yet.

If such treaties could be concluded with Guatemala, Nicaragua, Salvador, Costa Rica and Honduras, I am positive that within four or five years the whole of Central America would be gridironed with railroads, and the canal would be as good as built. C. R. R.

The d'Auria Air Compressor.*

BY HENRY G. MORRIS, PHILADELPHIA, PA.

The use of compressed air for the transmission of power has reached so great a development that we find numerous large establishments devoted to the manufacture of machinery for its production and application, and special periodicals published for the dissemination of information on the subject. Moreover, its employment is so general in mining operations that no apology is needed for the presentation to the institute of such a paper as the present. The admirable articles of E. A. Mix, published in *Compressed Air*, show a wide range in mechanical efficiency of air compressors, varying, under different conditions, from 15 to 60 per cent.; and it is evident that any improvements increasing the efficiency of these machines must interest mining engineers.

The present paper calls attention to a new form of air compressor, so extraordinary in character that, had I not built several of them and seen them work satisfactorily, I would hardly dare to bring it forward as an accomplished mechanical fact—namely, the d'Auria air compressor, built on the same principle as the d'Auria pumping engine.

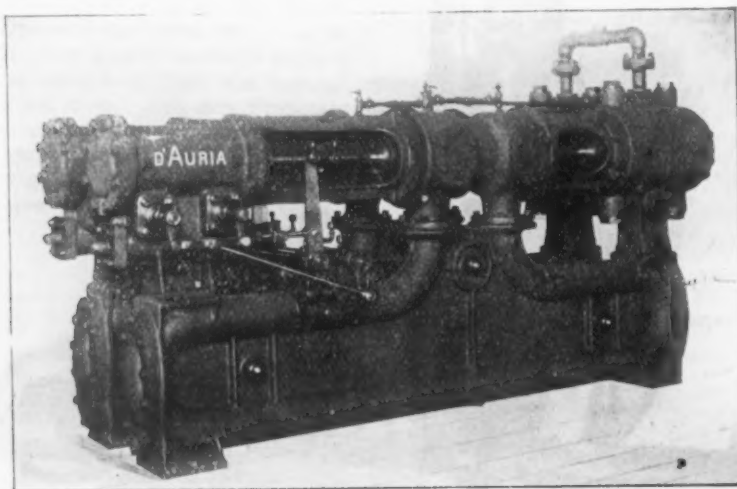
This is, as Fig. 1 shows, a non-rotative compressor of

and pipe are filled with water or any other liquid; and, as there is no loss of liquid beyond that which may leak through the stuffing boxes, are easily kept full from any source of water supply, through the small pipe and two check valves, shown in Fig. 3.

When the compressor is in action the liquid column contained in the compensator pipe is affected reciprocally, to and fro, by the plunger, and acts in exactly the same manner as a balance wheel in a watch, taking up the excess of energy in the first half, and giving it back with an exceedingly small loss due to friction in the second half of the stroke.

The action of this compensator is so perfect that the machine is never bolted down to the floor on which it stands, and, under such conditions, can be run at a high rate of speed without vibrations. I have seen an 8 x 9 x 8 inch compressor of this type work suspended in the air from chains, and also run while on rollers, and another of the same size making 340 strokes per minute without being bolted to the floor, and under these conditions I was able to balance upon it a 5-cent piece on edge.

These compressors have no dead centers. The cycle of their action being limited to the period of one stroke, they are able to start and stop instantly, and, if fitted with a sensitive pressure regulator, will stop completely



THE D'AURIA AIR COMPRESSOR.

the duplex type. So far as steam economy is concerned, it may be said to have less limitations than even a crank and fly wheel compressor, for the simple reason that, while in the latter the high degree of steam expansion calls for heavier fly wheels, heavier crank shafts, &c., the moving parts in the d'Auria compressor are not in the least affected by the degree of steam expansion, and the machine works equally well with a high as with a low expansion.

Since there is no mechanism of levers, &c., employed to equalize the propelling force and the resistance at every point of the stroke (such as is used, for instance, in a Worthington high duty pumping engine), the question arises, how perfectly smooth action is attained in the d'Auria compressor, starting at the beginning of the stroke with a high initial pressure of steam against no resistance, and ending the stroke with a propelling force practically *nil*, and resistance at a maximum.

This result is accomplished by the d'Auria "hydraulic compensator," which is a cylinder, A A, Fig. 3, fitted with a plunger, B, carried by the same piston rod which connects the steam and the air piston. The ends of the compensator cylinder communicate with each other by means of a loop of pipe, C C C, turned into the form of a very rigid bed plate, which adds to the strength of the machine, and preserves, under all conditions, the alignment of the piston rod. This cylinder

on a small variation of air pressure, and will start promptly when that pressure falls slightly below the normal.

It may be asked, What would be the effect of a sudden release of load on the compressor, such as might happen by the breaking of the air pipe? This contingency is met in the d'Auria compressor, as in the d'Auria pumping engine, by a simple and effective device. The exhaust steam in the steam cylinder is cut off by the piston itself about 1.5 inches from the cylinder head; and, from this point on, a considerable amount of steam cushioning is done in the cylinder, stopping the piston, under ordinary conditions, at about $\frac{3}{8}$ inch from the cylinder head. Of course, this $\frac{3}{8}$ -inch clearance is filled up with steam at boiler pressure; which, while it does no harm, does a considerable amount of good by keeping the piston and cylinder head hot when steam is admitted. On the other hand, the compensator plunger has a number of slots, which, in case the stroke becomes longer than normal (that is, if the clearance becomes less than $\frac{3}{8}$ inch), overrun the bearing of the plunger, and open a by-pass for the column of water which is pushing the plunger forward. Thus the pressure on both sides is equalized, and the pistons are prevented from striking the cylinder head. Of course, this device comes into play only when the load is suddenly released. Under ordinary conditions—that is, with $\frac{3}{8}$ inch of clearance in the steam cylinder—the by-pass in the compensator will not open.

* Paper read at the Richmond meeting of the American Institute of Mining Engineers.

The machine here illustrated is a small one. In larger sizes, the d'Auria compressors are made compound, both in air and steam, and fitted with the most approved steam and air valves to insure economy of steam. A d'Auria compressor of 3000 cubic foot capacity per minute, compound in steam and air, with inter-cooler all complete, weighs about 46,000 pounds, occupies a floor space of 25 x 8 feet, requires no other foundation than a floor to support its weight, and does not need even to be bolted to the floor. A compressor of the crank and fly wheel type, capable of doing equally effi-

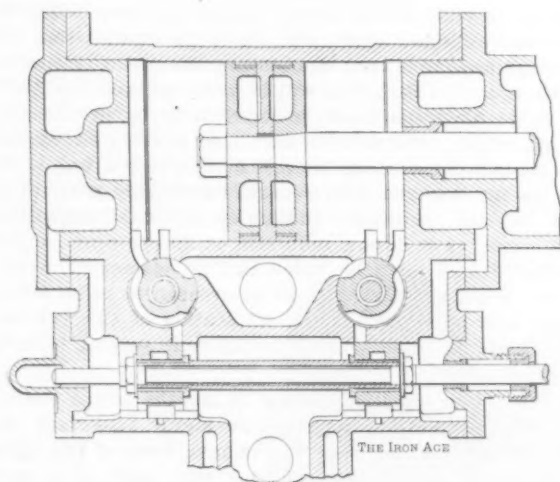


Fig. 2.—Section through Steam End.

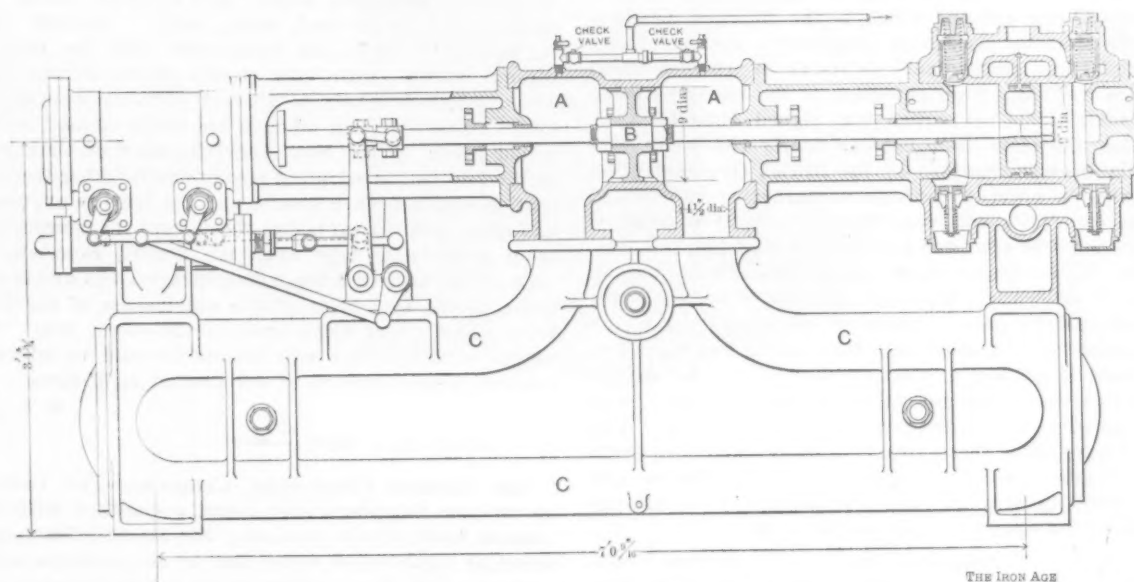


Fig. 3.—Longitudinal Sectional Elevation.

THE D'AURIA AIR COMPRESSOR.

cient work, and of the same capacity, would occupy a floor space of about 56 x 18 feet, and its fly wheel alone would weigh 45,000 pounds, the total weight of the machine being probably about 170,000 pounds.

Where space is a consideration the new type offers considerable advantages, occupying only one-fifth as much area as the former type. In weight, it is as one to four, involving much saving in the cost of foundations, which is an important item. Moreover, it can be moved from place to place without any trouble, being, in the full sense of the word, a portable machine. No matter what its size, it will always start and stop promptly by opening or throttling the steam without any dead center.

The principles involved in the d'Auria compensator have been recognized and stated by Professor Goodman of Victoria University, Leeds, England, in his work on "Mechanics Applied to Engineering," and the opinion of Charles A. Hague, a well-known American hydraulic

engineer, is expressed concerning the pumping engine (which involves the same principles) in the following extract from a letter addressed by him to me March 20, 1900:

"Several weeks ago I visited the Shawmont pumping station, Philadelphia, and there saw one of the d'Auria pumping engines at work against a heavy water pressure, about 160 pounds (400 feet) per square inch, and found that it was operating with great smoothness and regularity. I carefully examined its principles of design and construction, and it seems to me to be a most legitimate development and evolution of the Worthington duplex pump. Its principles of applying steam power to the purpose of pumping water retain all of the simple details of the Worthington pump, and the methods and means provided for accomplishing the expansion of steam in a 'direct acting' pump are marked by the entire absence of mechanism beyond the necessary cut off valves and one plain simple plunger attached to each main piston rod; the element of force necessary for the absorption and distribution of the initial and terminal steam pressure being a plain, simple water column, handled entirely without joints or working pieces by the auxiliary plunger mentioned above.

"The indicator cards seem to me to be practically perfect, and with the expansions shown the economy of steam is assured, equal to any other type of pumping engine producing the same diagrams.

The peculiar features embodied in the relief of the auxiliary plungers at the stroke ends, so as to make it possible to drive the engine boldly up to the finish of the stroke, and then stop the moving parts in a manner practically positive by the steam cushions, is an admi-

nable and effective feature, thereby providing for a uniform stroke without 'dash relief' adjustments.

"The mechanical effect of the hydraulic balance, so to speak, is that of a swinging wheel, vibrating instead of revolving, but possessing important advantages over a rigid mass of metal; the water in the balancing column being more adaptable to the purpose at the critical instant of finishing the stroke, through the medium of the relief openings in the auxiliary plungers.

"This engine is, in my opinion, a very reliable machine, and possesses the valuable feature of ease of handling, together with evident freedom from accident. It also seems to have in the most complete degree that sympathy with the main water column so peculiar to the direct acting pumping engine; the absence of which, in the crank and fly wheel engine, demands the most careful attention in its design and operation, especially under heavy water pressures."

The Reciprocity Treaties.

WASHINGTON, D. C., March 19, 1901.—Five of the eleven pending reciprocity treaties have been extended at the request of the Governments with which they were negotiated. These include the French treaty, which has been extended 18 months to September 24, 1902, and those made with Great Britain, covering British Guiana, Turks and Caicos Islands, Bermuda, and Jamaica, which would have expired on March 16, and which have been extended one year. The treaty covering Barbados, which completes the list negotiated with Great Britain, has not yet been extended, but does not expire until June 16.

The advocates of the ratification of these treaties, and especially the friends of the French treaty, are much gratified that the initiative should have been taken by the foreign Governments with which they were negotiated, for, as announced in *The Iron Age* several weeks ago, the Administration had decided not to solicit the further extension of any of the reciprocity treaties in view of the extreme indifference, not to say discourtesy, with which they have been treated by the Senate. If left to the Administration, therefore, all the conventions which have been extended would have failed during the present month. The five remaining treaties, exclusive of that covering Barbados, will expire during the present Congressional recess, as follows: Argentine Republic, May 9; St. Croix Island (negotiated with Denmark), June 5; Nicaragua, June 25; Dominican Republic, June 25, and Ecuador, July 10.

Whether applications will be made for the renewal of these conventions remains to be seen, but it is a significant fact and one which, to the minds of Administration officials, illustrates graphically the reciprocity principle, that grave doubt exists as to whether Great Britain will ask for an extension of the treaty covering Barbados. This convention was signed June 16, 1899, and has, therefore, been pending nearly two years. Its negotiation was regarded by the British Government as desirable in order to provide a market in the United States for fruits and vegetables, which, it was stipulated, should be admitted at a reduction of 12½ per cent. of the United States tariff rates. The treaty having failed of ratification, however, the British Secretary for Colonial Affairs gave all possible encouragement to the establishment of a steamship line, which the State Department is advised is already in operation, to market elsewhere the fruits and other products which it was anticipated would be shipped to the United States. The return cargoes of these vessels will, of course, be made up from other ports than those of the United States, and thus this commerce has been diverted chiefly through the failure of the Senate to take prompt action.

The overshadowing importance of the French treaty has given a special significance to the action of the Senate with regard to it, and although gratified at its extension, it cannot be said that the Administration's confidence in ultimate ratification has been fully restored. The attitude of the Senate has seemed like that of studied discourtesy. The protocol extending the treaty for one year from March 24, 1900, was forwarded to the Senate by the President in the latter part of February, 1900, but was not even reported from the Committee on Foreign Relations until the beginning of the present month, and was ratified but a few hours before adjournment. Had the revival of the treaty depended upon the ratification of this protocol there would have been a hiatus of nearly a year in which the treaty could not technically be considered as pending. The second protocol, extending the treaty to September 24, 1902, which was transmitted to the Senate on the 8th inst., might easily have been promptly ratified, but no action was taken upon it beyond referring it to the Committee on Foreign Relations, where it will sleep until next December. The Administration has ample precedent, however, for the claim that the action of the Senate is not necessary to the life of the treaty, but much regret is expressed that the opportunity to acknowledge the cour-

tesy of the French Government in requesting the revival of the treaty was not seized upon and acknowledged by prompt action upon the protocol.

The action of Commissioner Kasson in tendering his resignation as special plenipotentiary to negotiate reciprocity treaties was not unexpected, and followed naturally upon the determination of the Administration not to take the initiative in seeking the extension of these conventions. Mr. Kasson has left Washington for an extended absence, and although requested by the Secretary of State to withdraw his resignation, he will probably not do so until it is learned whether the other Governments with which treaties have been negotiated desire their further extension. It is anticipated that the conventions with the Dominican Republic, Ecuador, Nicaragua and St. Croix will be renewed, and the doubt as to the Argentine treaty is based chiefly upon the opposition to its ratification which was manifested by the domestic wool growing interest at the time it was negotiated, for it is generally regarded as highly advantageous to the principal industries of the Argentine, embracing as it does a reduction of 20 per cent. on the United States tariff on hides and all classes of wools. If the Argentine Government has reason to believe that there is a possibility of the ratification of this convention it will no doubt take the initiative in seeking to have it extended.

The action taken in adding 18 months to the life of the French treaty is regarded as highly important, as the extension of one year would have been of but little value owing to the fact that the early part of a new session of Congress is necessarily devoted to organizing and to the passage of the annual supply bills. Thus a 12 months' extension would have expired before the treaty could be reached, while with a renewal until September 24, 1902, the convention will be pending throughout the entire long session of the coming Congress, which is likely to sit well into the summer of 1902. Administration officials are much pleased at the action taken by the New York Chamber of Commerce on the 7th inst. in adopting resolutions favoring the ratification of the French treaty, and the hope is expressed that other commercial bodies throughout the country will bring pressure to bear upon the Senate, especially in view of the fact that the Administration has ample evidence of the soundness of the conclusions of the New York Chamber of Commerce to the effect that "the failure of this treaty will inevitably tend to create a demand for the revision of our present tariff laws."

W. L. C.

The Castner Electrolytic Company.—The Castner Electrolytic Company have made a contract with the Niagara Falls Power Company for an additional 5000 electrical horse-power to be used in an extension to be built to the company's works on the lands of the Niagara Falls Power Company at Niagara Falls. The Castner Electrolytic Company are an English syndicate organized some months ago to purchase the plant of the Mathieson Alkali Works at the Falls. The deal was made and the extensions now about to be carried out were part of the plans of the Mathieson Company. At present the works are using about 2000 electrical horse-power, and when the extensions are made and the newly contracted power brought into service the total amount of power consumed will be about 7000 electrical horse-power, or more than the output of one of the mammoth dynamos in the central station of the power company. The product of the plant is caustic soda and bleaching powder, the present output being about 300 tons a week, but this will reach 1000 tons a week when the extensive improvements are made. The additions to the plant will be carried out on the east side and will be very extensive, necessitating an outlay of about \$500,000. It is understood that half of the 5000 electrical horse-power just contracted for is to be delivered next November, and the other half in January, 1902. Benjamin F. Thurston was manager of the works for the Mathieson Company and he remains with the Castner Company.

The Calumet & Arizona.

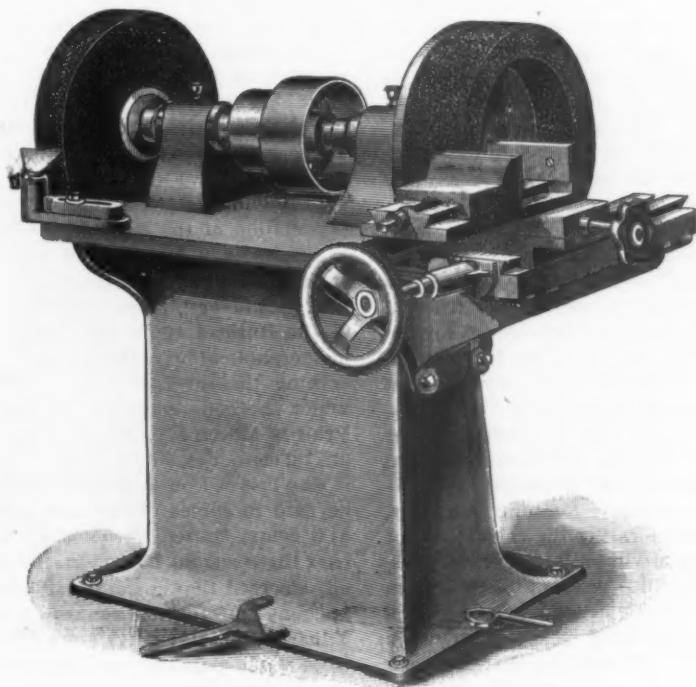
A very remarkable mining flotation was made last week. It was the Calumet & Arizona Copper Company, head office Calumet, Mich.; mines, Bisbee, Arizona. The company are the outgrowth of the Lake Superior & Western Development Company, who for a year or more have been exploring some claims at Bisbee, adjoining the rich Copper Queen.

In the development company are a number of Carnegie officials, including Clemson, Tener and others of Pittsburgh; Hulst, Cole and Powell of the Oliver Mining end, and a number of mining men at Calumet and Houghton, mostly men interested in Calumet & Hecla. The development company took half the \$2,000,000 of stock in the mining company and turned over to the latter the properties upon which there is a working two-compartment shaft down 885 feet, equipped for mining 500 tons daily, and the other half was put on the market at \$10 a share, or par. This was subscribed in less than three days, practically in one, without notice or advertisement, and without a single printed page of the

tained from the fact that the building will have a length of 542 feet; width, 66½ feet, and will be six stories high.

The Bridgeport Combination Grinder.

As will be noted by reference to the accompanying engraving, one end of the grinder built by the Bridgeport Safety Emery Wheel Company of Bridgeport, Conn., is furnished with a vise. This is carried by a carriage which is traversed at right angles to the face of the cup wheel, so that work can be squared off easily, quickly and with a fine finish. The device is well adapted to facing off nuts, squaring up dies and work of a similar character. The carriage has a hand wheel and screw to feed the work up to the wheel. The bed supporting the carriage is bolted firmly to the column. The opposite end of the spindle carries a plain wheel. The machine weighs 875 pounds, and from the floor to the center of the spindle measures 36 inches. The length of the oil bearings is 7 inches, and the diameter of the spindle in the bearings 1⅞ inches. The distance between the wheels



THE BRIDGEPORT COMBINATION GRINDER.

flotation prospectuses having been even open, or the inclosing strings cut. About 85 per cent. of the cash subscriptions were by men already in the development company, and the rest by their immediate friends. Boston was not approached or noticed in the deal.

There are \$400,000 in the treasury of the company to build a smelter and operate the mines, and a 500-ton smelter contract will be let at once. One of the claims adjoins the richest workings of the Copper Queen, which is up to the line in very high grade oxides, and other ores running from 7 to 20 per cent. copper. Others are adjoining workings of the Lowell and Arizona and W. A. Clark's Bisbee mines, and these workings trend to the Calumet & Arizona claims.

The reports of Cole, superintendent of the Oliver Iron Mining Company, and of Captain Hoatson of the Calumet & Hecla, were what caused this unprecedented rush. The day following the close of subscriptions there was a 30 per cent. premium on the rights. D. E. W.

It is announced by the Niagara Falls Power Company that the Natural Food Company have entered into a contract for 2500 electrical horse-power to be delivered from the central station. The Natural Food Company are now hurrying to completion a new factory building located on the upper river west of the big power house. Some idea of the magnitude of the plant may be ob-

is 32 inches. The vise jaws are steel faced, 6 inches wide by 2¼ inches high, and will take work up to 6 inches wide.

Nigrite Paint.

The L. Z. Leiter Company, 81 South Clark street, Chicago, have established a plant at Thirty-fourth and Iron streets for the manufacture of paint from nigrite. Mr. Leiter is one of the largest property owners in Chicago and has for years been in search of a paint for exterior use possessing greater durability than the pigments in ordinary use. In the course of his investigations his attention was drawn to nigrite, with which such satisfactory results were secured that he purchased large deposits of that mineral in Utah and made arrangements for manufacturing the paint commercially. It is made in blacks, browns and fawn color, and is sold at about the same price as standard paints. It is adapted for use on metallic surfaces, brick, wood and plaster. The mineral is a gummy substance and the paint makes a glossy surface like varnish. A metal painted with it has the same appearance as if japanned. Robert W. Hunt & Co., Chicago, have made tests of metals painted with the company's nigrite and officially report that they found no effect from the fumes of hydrogen sulphide, sulphurous acid or boiling sulphuric acid.

The Russian Tariff Situation.

WASHINGTON, D. C., March 26, 1901.—The Treasury Department is advised that the test case before the Board of Classification of the General Appraisers to determine the correctness of the ruling of the Secretary of the Treasury that the manipulation of the internal revenue tax on sugar by the Russian Government amounts to a bounty will be heard before the end of the present week. Special Counsel W. J. Gibson, who represents the Treasury Department before the board at New York, has spent several days in this city during the past week conferring with the officials of the customs division with regard to the details of the Government's defense. At the direction of the Secretary of the Treasury Mr. Gibson will offer to agree upon a statement of facts in order that the case may be argued upon the basis of the evidence now in hand. This evidence consists in official reports from various sources as to the authenticity of which there is no doubt, but which have not been prepared in the form of affidavits. As counsel for the importers insist that no bounty within the meaning of the Dingley act results from the manipulation of the internal revenue tax on sugar, as described by the Secretary of the Treasury, there would seem to be no reason why the issue should not be joined on the basis of the secondary evidence now available, in which case a decision might be reached within the coming week. Otherwise, the Government will be obliged to cable for affidavits and also to require the attendance of several American diplomatic and consular officials now in Europe. The sugar importers have so much at stake, however, and the impression is so strong that on the basis of the evidence now in hand the Board of General Appraisers will hold that a bounty is paid by the Russian Government, that it is quite possible that counsel for the importers will insist on laying a foundation for this important case with primary evidence which would result in a delay of a month or two in taking it up.

The Treasury Department officials are preparing for a hard legal battle in view of the enormous financial interests involved in this issue. The domestic sugar refiners, including the American Sugar Refining Company, are vitally interested in demonstrating the correctness of Secretary Gage's ruling which will entirely exclude Russian sugars. The present invoice price of these sugars is about 2 cents per pound, and the regular duty is 1.9 cents, while the countervailing duty is 0.75 cent. In the case in point, upon which protest has been filed for test purposes, the invoice value of the importation was \$15,389, the regular duty \$13,016, and the countervailing duty \$4827, from which it is seen that the duties levied on sugar under the Secretary's interpretation amount to considerably more than the value of the sugar and are conceded to be absolutely prohibitory. The Russian sugar exporters are estimated to have cleared a profit of \$225,000 in the past seven months on sugars shipped to the United States and are very anxious that this outlet should not be closed. They are therefore interested in having the courts decide that the tax as levied by the Russian Government does not constitute a bounty.

The strong interest which is being taken in this case by American manufacturers of iron and steel products effected by the retaliatory duty levied by Russia is reflected in the inquiries which are reaching the Department from prominent lawyers retained as counsel, who are endeavoring to get at the basis of Secretary Gage's ruling that the Russian Government pays a bounty on sugar. For the benefit of these inquirers the following memorandum has been prepared, which is believed to present the matter in a nutshell, and which outlines the contention which will be set up by the Government in the pending test case:

"1. The Russian Government establishes the maximum price of refined sugar in the domestic market.

"2. Estimating the demand for home consumption, it permits the refiners to put on the market, under a tax of 1.75, a certain limited quantity, well within the known home consumption, but provides that any excess put upon the home market shall be taxed at 3.50, or twice the regular tax (1.75).

"3. The interest of the individual refiner, then, lies in putting out all he can at a tax of 1.75 and none under the tax of 3.50.

"4. The inevitable result is an excess of stock in the hands of the refiners as a whole, and to get rid of this surplus it is exported. Now a method exists by which refiner A can get the benefit of the failure of refiner B to supply the home market with his full quota. Home refiner A becomes willing to pay refiner B a certain reward if he will export a portion of his allotted quota and give A the official evidence of such exportation, which enables A to sell in the home market at a tax of 1.75 an equivalent portion of the sugar produced by him (A) in excess of his quota.

"5. The maximum prices fixed by the Minister of Finance are always practically reached by the trade, and are such as to give a very large profit to the producer, particularly in those provinces where, owing to a better economic condition of the population, the demand for sugar exceeds the local supply from the stock entitled to withdrawal for consumption at a single tax. The ability of the producers of sugar in certain regions to obtain higher prices than those obtained in other regions gives rise to the arrangement mentioned in paragraph 4.

"6. While it could not be directly inferred from the wording of the statute itself that the Government, in arranging its system of sugar taxation, contemplated an encouragement to export, this object is clearly expressed in the instructions issued in pursuance of the statute by the Minister of Finance, wherein this arrangement is expressly declared to be made 'in order to facilitate the exportation of the surpluses to foreign countries.' That it results in a bonus from source to those who export sugar there can be no doubt."

A misunderstanding which has arisen as to the value of the Russian ruble for customs purposes has resulted in the publication of numerous incorrect statements concerning the rates of duty levied by the Russian tariff under the general, conventional and punitive schedules. Prior to March 3, 1899, the Russian ruble was calculated at 77.2 cents, gold, but by a decision of the Russian Council it was decreed on that date that henceforth duties might be paid in rubles of the new paper standard, valued at 51.5 cents, United States currency. In order, however, that there should be no shrinkage of the revenue it was also decreed that customs rates should be reckoned "one and one-half fold as against those previously existing." Thus, the specific rates were increased 50 per cent., but were made payable in a depreciated ruble. The result was practically to retain the old gold ruble of 77.2 cents for the calculation and payment of tariff rates. The schedule published in *The Iron Age* last week was carefully calculated with these facts in mind and was correct. In expressing the equivalents of all Russian tariff rates given in rubles it should be remembered that the gold ruble, and not the present 51.5 cents paper ruble, must be used.

The prospect that relief for American exporters of iron and steel products covered by Russia's retaliatory decree may be long in coming through the courts has stimulated the State Department and the American Ambassador at St. Petersburg to renewed efforts to bring the Russian Government to a realizing sense of the fact that, however distasteful the ruling of the Secretary of the Treasury may be, it does not constitute a discrimination against Russia for the reason that similar action has been taken in the case of every country paying an export bounty on sugar. The officials of the Russian Embassy in Washington are exceedingly courteous in conducting these negotiations and are evidently desirous of demonstrating Russia's anxiety to retain the cordial friendship of the United States at a time when affairs in the Orient are assuming a critical aspect. It is most important to Russia that the United States should not join with England and Germany in aggressive action contrary to the interests of Russia in Manchuria, where millions of rubles are involved for every copeck in the export sugar industry. It is learned indirectly that considerable pressure has been brought to bear upon Minister De Witte to induce him to withdraw the retaliatory decree, and it is hoped that after due consideration of

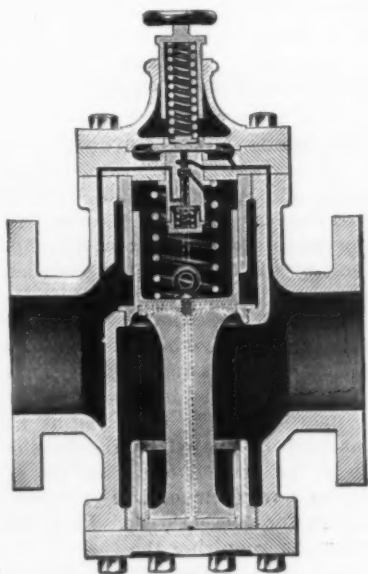
the representations that have been made to the Russian Government on behalf of the United States this action will be taken.

W. L. C.

The D'Este Steam Pressure Regulator.

The accompanying sectional view of the steam pressure regulator built by the Julian D'Este Company of Boston, Mass., shows a main valve operated by a loose fitting piston; a secondary valve in the top of the chamber over the piston; a metallic diaphragm (performing the double office of operating the secondary valve and making a joint to the cap which contains it), and a side passage connecting the chamber under the diaphragm with the outlet. When the spring over the diaphragm is compressed the diaphragm gives way, and thus opens the secondary valve upon which it rests, allowing the steam to escape from the upper side of the main piston valve into the low service, and at the same time opening a port to the under side of the piston, admitting full boiler pressure, which lifts the main piston valve open to its full capacity.

The main valve remains open until the back pressure, communicated from the outlet through the side passage,



THE D'ESTE STEAM PRESSURE REGULATOR.

is sufficient to raise the diaphragm and thus close the secondary valve, shutting off high pressure from the bottom of the piston; then the high pressure steam or water flows by the loose-fitting piston to the space on top of the piston, and forces it on its seat, thus uniformly maintaining the pressure at which it is set.

This regulator occupies the same space as a globe valve for the same size pipe, and is suitable for any boiler pressure and will deliver accurately and uniformly any lower pressure from one to within a few pounds of the initial pressure.

New Incandescent Lamp.—United States Consul-General Guenther, at Frankfort, reports to the State Department that C. Petersen of Christiania has constructed a new incandescent lamp which is of interest on account of its peculiar arrangement. For the radiation of light a conductor of the second class, which conducts electricity only when heated, is used, the same as in the Nernst lamp. The conductor in this new lamp, however, is not a thread, but a small rod, which is brought to a white heat and thereby emits light. Around this second class conductor a thin metal wire of good conductivity is wound, which is connected with the current conductor by equalizing resistors, which serve the purpose of heating the second-class conductor and increasing the resistance of the current. The second-class conductor takes up the greater part of the current. This arrangement re-

sults in a great saving of the electric power, which about equals that of a Nernst lamp, but yields a considerably stronger light.

Lake Iron Ore Matters.

DULUTH, MINN., March 25, 1901.—As one result of the steel combination the number of iron ore agents at Cleveland will be very much reduced. It looks as though in a short time there would be none left but two firms. By the inclusion of the Lake Superior Consolidated Iron Mines one large firm are practically out of ores, and another are nearly in the same position by the inclusion of the Federal Steel interests. This firm have been buying mines of late, both before and since the combination, but it is claimed that these mines will go into the combination soon. Negotiations are being carried on for several mines, and it is supposed that more will be wanted.

The Eastern Minnesota traffic interest is still securing ore lands on the Mesaba range, and has made several deals of more or less importance the past few days. These deals include State leases, private leases and fee tracts. The intention of the road is not to mine these lands, but to hold them for others that may want to mine or explore and to lease them, taking back a traffic contract for the ores found therein.

Ore Prices.

It is reported from the East that the price of ore will be made this week, and that it will range between \$5.50 and \$5.75. This for the base price for the standard, which last year was \$5.50, in 1899 was \$2.95, and in 1898 was \$2.75. It cannot be ascertained here that the price will be fixed as high as \$5.50, which will be virtually an advance of 50 cents a ton or more from last year on account of the reduction of that amount in lake freights. If any such price is made it will mean that the policy of the United States Steel Corporation is to squeeze outside steel makers who have no ore supplies. It will result in an immediate scramble for ore properties on the part of outsiders, and will have a decided effect on the general situation that cannot but have a most important bearing.

This scramble for ore reserves is indeed already on. I am reliably informed by owners of a number of mines that they have been approached of late for prices and might clean up their entire holdings at good prices if they so desired. They are in some cases doing this and there are a lot of options out that hold until May 1 or thereabouts. In many cases, however, the owners are waiting to see what the Steel Corporation will do, and where the base price of ore will be fixed for the year. At any such price as has been suggested there will be such a scramble in a fairly good mine, to the operator, that he will not have that desire to sell he might otherwise feel. And so the matter rests for the time being, awaiting the close of the Morgan deal, and the settlement of prices. It is a fact that most of the properties under option for sale now and sold in the past few weeks have not been to the trust, but to outsiders who are picking up what mines can be readily had at prices more or less reasonable. It is reasonable to suppose that the trust will be looking after its reserves also in a short time, and will not be content with the vast reserves it has secured in the Rockefeller, Minnesota, National, American and other concerns it has secured.

Mesaba Range.

A good deal of excitement was occasioned among owners of property on the western end of the Mesaba last week by the announcement by Associated Press that the Arcturus mine had been sold to a St. Paul lawyer named Goforth for \$600,000. No such sale has been made and the best *bona fide* offer made for the property was \$400,000 by another party. It is likely that this will be accepted. There is quite a body of ore, in all probability in the neighborhood of the Arcturus in the southern part of town 56, range 24. The Arcturus was explored by D. M. Sabin, J. P. Snyder and others some years ago at a cost of about \$20,000, and nothing of value was found. The Buckeye, an adjoining property, has

been taken under bond by a strong party and will be explored at once. The Diamond, on the same formation and close by, has been bought by Carnegie interests quite lately for \$200,000. All these mines so far have shown but low grade and no great quantity of that, but they are expected to do better on expert examination by professionals. This district is practically a new one for the Mesaba, being about 20 miles west from Hibbing, near where are the most westerly important developments of the range. Others besides those spoken of have taken properties about there and are about to explore.

The State lease in section 20, town 58, range 19, heretofore spoken of as having shown more than 10,000,000 tons of a good non-Bessemer ore, has been bought and will probably get into the hands of the Republic Iron & Steel Company. The buyers have paid \$68,000 bonus for the 25 cent lease. This ore will be carried by the Eastern Minnesota road.

Explorations will be commenced upon the Lincoln in the spring, where more than 100 feet of ore were found some time ago. Some other lands near by are also under exploration.

Gogebic Range.

The mines known as the Curry properties have been sold to Pickands, Mather & Co. of Cleveland, and will be operated by them. These are the Cary and Superior mines, with an annual possibility of output of about 150,000 tons. The Cary ore is a manganiferous, carrying about 4½ per cent.

Several of the independent mines of the range are liable to pass into the control of other parties shortly.

Marquette Range.

Over the main body of ore on the lands bought of G. J. Maas by the Cleveland Cliffs Iron Company there is a tremendous thickness of quicksand, and the shafts to be sunk will be considerably, half a mile or so, west of the Negaunee line. Development will be carried on in these lands very soon.

The last piece of land about Teal Lake has been bought by the Oliver Company. The 40 acres at the lake have cost the Oliver and Cleveland Cliffs companies \$51,500, which is a good deal of expenditure for a mere hope. Other tracts have been bought by both companies in Negaunee, but the boom of the past few weeks is over, and more than \$1,000,000 has been distributed to Negaunee holders.

The case of the Negaunee Iron Company and the Kaufmann interests *vs.* the Cleveland Cliffs Company is now in the courts. This sums up the case briefly: The Pioneer Iron Company, of whom the defendants claim to be the successors, some 50 years ago received a lease from C. T. Harvey, permitting them to mine ore on the lands now owned by the complainants free of royalty for 99 years, if the ore should be smelted at Marquette. Under this lease the Cleveland Cliffs Company have been exploring two years and have probably found much ore. The complainants claim that the Pioneer Iron Company are defunct, and with them the lease, and demand that the Cleveland Cliffs be ejected. The case is of extreme importance.

Menominee Range.

Considerable rail shipments are now being made to Chicago. The Aragon, Pewabic and Cundy mines are shipping this way heavily and some other mines to a smaller extent. It is expected that the Aragon, which is good for 400,000 or more tons a year, will go into the possession of the United States Steel Corporation. It is an important property.

The Great Western, Crystal Falls and Armenia are being worked heavily, the former two hoisting largely, and the latter being put in position for mining later. The shaft is being sunk and stoping ground is being opened.

Pickands, Mather & Co. have christened their new Murphy mine the Baltic and a machinery plant is being installed. Ore will be shipped this season. The same firm have secured the Vivian, which adjoins the Quinnesec, and on which a tremendous mine is hoped for. Sinking is under way and will be vigorously prosecuted.

D. E. W.

Central Pennsylvania News.

HARRISBURG, PA., March 25, 1901.—The Harrisburg Foundry & Machine Works have 20 per cent. more men employed at their plant than at this time last year. The entire plant is running day and night, and has been for several months. Notwithstanding the enlargement of this plant twice during the year, its capacity is tested by the present rush of work. It is understood that there may be further enlargements during the year. The company are making large shipments to Japan, Australia, South American and other foreign points.

There is great activity at the tin plant of the Lalanc-Grosjean Mfg. Company. There are sufficient orders on hand to keep the plant running steadily throughout the year. There has been some difficulty in keeping up the supply of steel, and it is intimated that there may be some increase at this plant early in the summer.

An unusual rush of orders at the mills of the Harrisburg Rolling Mill Company will keep that plant in steady operation for several months.

Enough orders have been booked by the Central Iron & Steel Company and collateral plants to keep them busy for months to come.

The Harrisburg Pipe & Pipe Bending Company are doing a tremendous business, and the orders have been received so numerous during the last month that there is no doubt of a steady operation of the entire plant throughout the summer. The new building now in course of construction is almost completed. s.

The Jones Mixer Patent.

WASHINGTON, D. C., March 25, 1901.—The Supreme Court has ordered the reargument of the case of the Carnegie Steel Company *vs.* the Cambria Iron Company, the action being a suit by the complainants based on the alleged infringement by the defendants of the so-called "Jones mixer" patent. This notable case, which involves the validity of a patent which it is claimed by the complainants covers a process in very general use in steel making plants, was fully argued before the court several weeks ago, as reported in *The Iron Age* at the time. Counsel in the case had anticipated that the decision would be handed down at the present term, but the action of the court in ordering a reargument will probably operate to delay the decision for another year. No reason is assigned by the court for requiring the case to be argued again, but it is suggested that the court is divided on the merits of the suit and that the justice or justices whose votes are to decide the case desire further light.

There is very little prospect that the case can be heard again at the present term, and it will probably go over until the next October term. The court on Monday of this week took a recess for a fortnight and upon reconvening will sit only about 30 days before adjourning for the summer. In the present crowded state of the docket it is improbable that the court will agree to advance this case, and otherwise it will not reach it until some time next winter.

W. L. C.

The Warren Company, 26 and 28 Jackson street, Chicago, are manufacturing Warren's pulley cover. This is a grease proof compound, applied with a brush to the surface of a pulley to diminish the slipping of the belt. This cover, it is stated, gives to pulleys a firm, adhesive and leather like surface which has a natural affinity for the belting and enables it to cushion to the pulleys. The air being excluded, the atmospheric pressure causes adhesion. The cover is durable, one application lasting for years. This cover does not make the belts stick or cling to the pulleys.

President John B. Roach of the Delaware River Shipbuilding & Engine Works was in New York last week and signed contracts for the construction of a big vessel, 375 feet in length, for the Savannah line. This ship will be one of the finest afloat and will ply between New York and Savannah, Ga. The Tidewater Steel Company will furnish the plates, the quantity being about 2000 tons.

The American Can Company Chartered.

As was predicted in our last issue, the incorporation papers for the American Can Company were filed on Tuesday, March 19, with the Secretary of State of New Jersey. The capitalization of the new corporation is \$88,000,000, one-half of which is 7 per cent. cumulative preferred stock and one-half common stock. The objects of the company are stated to be "to manufacture and deal in cans and receptacles of all kinds, metal ware of all kinds and machinery for making the same." The incorporators are G. Sumner, A. P. Bartlett, W. E. Dwight, J. C. Walker and J. J. Treacey, all of Jersey City. Reed, Simpson, Thatcher & Barnum of New York are the counsel for the company. The capitalization of the concern is \$10,000,000 more than the amount at first reported.

The American Can Company absorb about every can manufacturing plant of any importance in the United States, and represent fully 85 per cent. of the entire industry. Although no official list of the constituent concerns has been published, it is understood that the following can making plants and manufacturers in related lines are among those included in the consolidation:

Glina & Co., John D. Hass & Assman, New York City.
Somers Bros., S. A. Ilsley, Mersereau Mfg. Company,
Wm. Vogel & Bros., Joseph Le Comte Mfg. Company,
Brooklyn, N. Y.

Black & Krebs, H. C. Campen & Co., Dougherty & Mann, Eastern Can Company, Norton Tin Plate & Can Company, R. Tynes Smith Can Company, A. Booth & Co., Martin Wagner Company, H. F. Miller & Co., Eastern Can Company, Kirwan & Riggs, Lineweaver & Co., Imperial Seamer Mfg. Company, Phelps & Co., Timothy Ryan, Jr., Baltimore, Md.

Norton Brothers, Frank Diesel Can Company, Illinois Can Company, J. B. Low Mfg. Company, Franklin Rudolph, Chas. P. Parish & Co., Chicago, Ill.

Boston Can Company, Sleeper Machine Company, New England Can Company, Boston, Mass.

C. P. Poole & Co., Robert Porter's Sons, Joseph G. Taite's Sons, Philadelphia.

United States Can Company, Model Specialty Mfg. Company, Buffalo, N. Y.

Bates Mfg. Company, Cuba, N. Y.

Empire State Can Company, Geneva, N. Y.

Beardsley Mfg. Company, H. B. Hunt Mfg. Company, Cleveland, Ohio.

Dugdale Can Company, Indianapolis, Ind.

William A. Gill & Co., Columbus, Ohio.

Youngstown Specialty Mfg. Company, Youngstown, Ohio.

Union Can Company, Hoopeston, Ill.

Tri-State Can Company, Keokuk, Iowa.

E. P. Breckinridge Can Company, Toledo Tinware Mfg. Company, Toledo, Ohio.

J. H. Pocock Can Company, St. Louis, Mo.

Clark Can Company, Detroit Can Company, Detroit, Mich.

Horne & Danz Company, St. Paul, Minn.

Albert Fischer Mfg. Company, Hamilton, Ohio.

Hunt Stamping Company, Kansas City, Mo.

Pacific Sheet Metal Works, San Francisco, Cal.; Los Angeles, Cal.; Astoria, Ore., and Fair Haven, Wash.

Eaton-Ritchell Mfg. Company, Denver, Col.

Hasker & Marcuse Mfg. Company, Richmond, Va.

Reynolds Brothers Can Mfg. Company, S. J. Seneca, Havre de Grace, Md.

Record Mfg. Company, Conneaut, Ohio.

J. M. Rude Mfg. Company, Covington, Ky.

F. A. Walsh & Co., Milwaukee, Wis.

Sycamore Can Company, Sycamore, Ill.

Tanner Brothers Mfg. Company, Belfast, N. Y.

Chas. E. Pierce & Co., Cambridgeport, Mass.

Great Western Can Company, San Jose, Cal.

Louisville Can Company, Louisville, Ky.

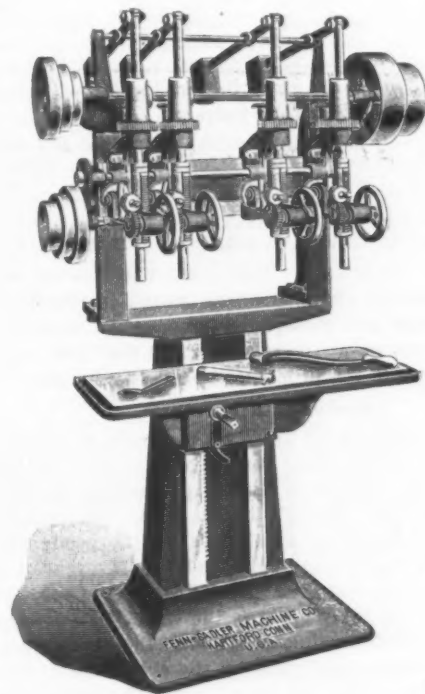
In addition the can making plants attached to a number of packing factories and those of concerns who manufacture other lines of tinware have been purchased. It is estimated that the new company will use about 4,000,000 boxes of coke tin plates annually, representing ap-

proximately 60 per cent. of the capacity of the American Tin Plate Company in this line.

The following officers have been elected: President, Edwin Norton; secretary and treasurer, F. S. Wheeler. Executive Committee: D. G. Reid, W. B. Leeds, W. T. Graham, F. A. Assman, Edwin Norton, W. H. Moore and H. F. Akin. Directors: W. H. Moore, J. H. Moore, D. G. Reid, W. B. Leeds, W. T. Graham, F. S. Wheeler, Warner Arms, Edwin Norton, C. S. Guthrie, H. F. Akin, James McLean, F. A. Assman, E. P. Breckenridge, F. Rudolph, H. W. Phelps, S. A. Ginna, W. M. Leeds, G. G. McMurtrie, Henry Wick and Irvin Ayres. It is understood that several additional vice-presidents are to be named soon.

The Fenn-Sadler Multiple Drill.

The new drilling machine built by the Fenn-Sadler Machine Company of Hartford, Conn., will drill four 5/8-inch holes at once. It has a power feed of 6 inches, with automatic knock off and quick return. The heads are adjustable sideways on the cross rail, the greatest



THE FENN-SADLER MULTIPLE DRILL.

distance from center to center of the outside spindles being 24 inches and the minimum distance between the centers of spindles is 4 1/2 inches. The maximum distance from the spindles to the table is 25 inches, and the latter measures 12 x 34 inches. The table is raised and lowered by means of a rack and pinion operated by a crank handle. The operating levers are most conveniently placed; the feed is thrown in with the left hand, which is a natural movement after bringing the drill down to the work with the right hand. The rack is turned to the front and an idler pinion runs in rack, which permits of the heads being brought close together, and the operator does not have to reach in between spindles to throw his feed in or out. The machine weighs 1000 pounds.

The report comes from Carbondale, Ill., that the Illinois Steel Company have purchased several thousand acres of Williamson County coal land. The land lies near the new mining town of Herrin, and is among the best coal fields in the entire State, being in a vein that averages 8 feet. It is also reported that the company have options on other lands in close proximity.

A magnificent canard has been issued from Springfield, Ill., to the effect that all the coal mining companies in the State are to be consolidated in one gigantic corporation. The report is ridiculed by coal operators.

The Production of Bessemer Steel Ingots and Rails in 1900.

The American Iron and Steel Association has issued complete statistics, received direct from the manufacturers, of the production of Bessemer steel ingots and castings and Bessemer steel rails in the United States in 1900. Our ingot statistics below include the production of a few thousand tons of Bessemer steel castings.

Bessemer Steel Ingots.

The total production of Bessemer steel ingots in 1900 was 6,684,770 gross tons, against 7,586,354 tons in 1899, showing a decrease in 1900 of 901,584 tons, or almost 12 per cent. The production of 1899 was the largest in our history, but it may be equaled in a year or two, although open hearth steel is proving to be a most formidable rival of Bessemer steel. The following table gives our production of Bessemer steel ingots, including steel castings, in the last six years. Of the production last year 6467 tons were steel castings, against a similar production in 1899 of 3939 tons:

Years.	Bessemer Gross tons.	Years.	Bessemer Gross tons.
1895.....	4,909,128	1898.....	6,609,017
1896.....	3,919,906	1899.....	7,586,354
1897.....	5,475,315	1900.....	6,684,770

The following table gives the production of Bessemer steel ingots in the last four years:

	1897.	1898.	1899.	1900.
States—Ingots. Gross tons.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pennsylvania ...	3,060,049	3,402,254	3,968,779	3,488,731
Ohio	1,041,541	1,489,115	1,679,237	1,388,124
Illinois	943,774	1,105,040	1,211,246	1,115,571
Other States....	429,951	612,608	727,092	692,344
Totals.....	5,475,315	6,609,017	7,586,354	6,684,770

There were no Clapp-Griffiths works in operation in 1900, and only one Robert-Bessemer plant was active. Seven Tropenas plants were at work in that year, and all were employed in the production of steel castings.

Bessemer Steel Rails.

The production of all kinds of Bessemer steel rails by the producers of Bessemer steel ingots in 1900 was 2,361,921 gross tons, against a similar production in 1899 of 2,240,767 tons and 1,955,427 tons in 1898. The maximum production of Bessemer steel rails by the producers of Bessemer steel ingots was reached in 1900. The year of next largest production was 1899. In 1887, 13 years ago, 2,044,819 tons were made. This was the third year of largest production. The following table shows the production by States of Bessemer steel rails by the producers of Bessemer steel ingots in the last four years. The figures given do not include a very small quantity of rails made each year from purchased blooms or rerolled steel rails, statistics for both of which products for 1900 are not yet available:

	1897.	1898.	1899.	1900.
States—Rails. Gross tons.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pennsylvania ...	1,024,386	1,052,771	1,224,807	1,195,255
Other States....	500,013	902,656	1,015,960	1,166,666
Totals.....	1,614,399	1,955,427	2,240,767	2,361,921

At the request of the manufacturers we separated for 1897, for the first time, the production of Bessemer steel rails weighing 45 pounds and less than 85 pounds to the yard from those weighing less than 45 pounds and over 85 pounds. This separation we continue for 1900, as follows:

	Under 45 pounds.	45 pounds and less than 85.	85 pounds and over.	Total.
States—Rails. Gross tons.	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pennsylvania ...	82,161	784,976	328,118	1,195,255
Other States....	72,635	820,091	273,940	1,166,666
Totals.....	154,796	1,605,067	602,058	2,361,921

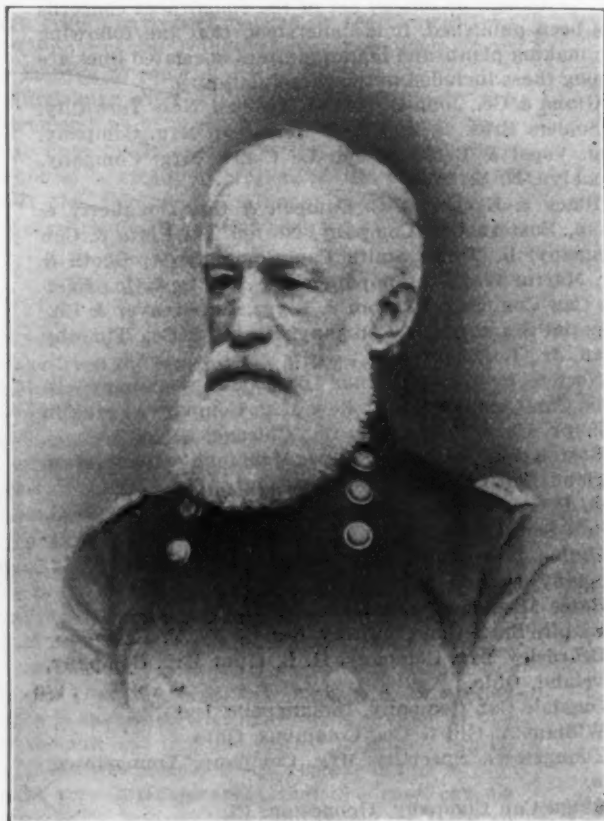
The total production of rails in 1900 will include rails made from open hearth steel and iron rails. When all the figures are collected it will probably be found that our total production of all kinds of rails in 1900 was about 2,400,000 tons.

The National Association of Manufacturers has removed its headquarters from the Bourse to the Real Estate Trust Building, Philadelphia.

General John F. Rathbone.

One of the oldest and most prominent and respected figures in the stove trade passed away on Wednesday, March 20, in the person of General John F. Rathbone, president of Rathbone, Sard & Co., the pioneer stove manufacturing firm, of Albany, N. Y., and Aurora, Ill. General Rathbone's death, which occurred at his home in Albany, was the result of an attack of the grip, with which he was seized about two weeks ago. His end was peaceful and painless.

John F. Rathbone was born in Albany on October 9, 1819, and received his early education at the Albany Academy and the Brockport Collegiate Institute. His father died in 1833, and very soon after he removed to Rochester, N. Y., where he began his career in business. Four years later, in 1837, he returned to Albany, with whose interests he was identified ever since. It was then that he entered upon the line of business which he



GENERAL JOHN F. RATHBONE.

followed throughout his life. He became a clerk in the foundry of Joel Rathbone. During three years' service in that capacity he not only performed his regular duties, but also perfected himself in the practical details of the business. He had a "floor" prepared for his own use and learned the business of a molder by actual practice of the art. So with other details, until he was fully equipped with the special knowledge which later proved of great value in the business which he organized for himself. After a business connection of five years with the late S. H. Ransom, in 1845 he built a stove foundry, which subsequently became one of the largest in the world. In later years he associated with himself Grange Sard and others in the firm known as Rathbone, Sard & Co. Some years ago General Rathbone left the most active supervision of this firm to his juniors, although he remained the president of the concern.

Early in 1861 Mr. Rathbone was appointed brigadier-general of the Ninth brigade of the National Guard, State of New York, and on the opening of the Albany depot for volunteers he was appointed commandant. His services in organizing and forwarding volunteers were active and incessant. On being relieved of the command he was highly complimented by his military superiors. January 1, 1873, he was appointed adjutant-general by

Governor Dix, a position in which he displayed his well-known energy, good judgment and public spirit.

General Rathbone was until recently president of the Mutual Fire Insurance Company of Albany. He was a Park Commissioner, a trustee of the Albany Rural Cemetery, a trustee of Rochester University. In fact, he filled a variety of positions of honor and trust during his long life; the mere mention of which cannot be undertaken here. Among his large benefactions should be mentioned his gift of \$40,000 to the Rochester University, of which the memory is preserved in the Rathbone Library of that institution.

Samuel J. Reeves.

A brief notice was given last week of the death of Samuel J. Reeves, which occurred at Canal Dover, Ohio, on the 15th inst., of typhoid fever. A portrait of Mr. Reeves is here presented. Although but a young man, Mr. Reeves had made for himself a high reputation for business ability and had before him a most promising career which has been brought to an untimely end. He was a son of Jeremiah E. Reeves, founder of the Reeves Iron Company, who recently sold their property to the great



SAMUEL J. REEVES.

consolidations. The senior Mr. Reeves is still living and in vigorous health. His son Samuel engaged in business with his father at an early age and soon became prominent in connection with the management of the Reeves Iron Company and of other enterprises in which the family interests were concerned. At the time of his death he was president of the Reeves Mfg. Company of Canal Dover, of the Dover Construction Company, now engaged in building electric lines, and of the American Macaroni Company, Chicago. He was born in Connellsville, Pa., September 14, 1870, and was taken by his parents to Niles, Ohio, in 1871. They removed to Canal Dover in 1884. He leaves a widow and three children. Although Mr. Reeves was of an exceptionally retiring disposition, he developed remarkable business capacity. He was also a man of great public spirit, taking a deep interest in everything calculated to build up the community in which he resided.

The blast furnace employees of the Mahoning and Shenango Valleys will demand an advance in wages to commence on April 1. It will be recalled that some time since the men were reduced about 10 cents a day, and it is probable this will be restored.

Power Installation Company, consulting and contracting power engineers, 202 Main street, Buffalo, N. Y., have been incorporated. The officers are Max Mauran, president; M. E. Wescott, secretary and treasurer; Geo. F. Wescott, engineer and general manager.

Notes from Great Britain.

Two Interesting Announcements.

LONDON, March 16, 1901.—Two interesting announcements are made this week. At the shareholders' meeting, held at the Cutlers' Hall, Sheffield, of William Jessop & Sons, Ltd., of the Brightside Works, Sheffield, it was authoritatively given out that the firm intended to carry on certain branches of this work in the United States. The avowed object is two-fold: to escape the high tariff and enable the firm to retain their present valuable American connection. William Jessop, chairman of the company, in making the announcement, had first to declare a reduced dividend. This was the more disappointing inasmuch as they last year did the largest turnover in the history of the company. The reduction in dividend was primarily due to the excessively high price of fuel, and in a secondary degree to the fact that as they do a very large export trade, they have been seriously hampered by adverse tariffs. The predisposing cause leading to the decision to lay down plant in the United States was the recent combine among American crucible steel manufacturers. As the American duty on crucible steel amounted to \$50 per ton and as fuel was cheaper in America than in England, the chairman stated that, taking all these points into consideration, they had decided to open up in the United States. The scheme is not yet absolutely completed, and the shareholders' consent must be obtained. I do not think there is any bluff in this announcement, and I imagine the situation must be fairly matured. It is difficult to conceive of this large firm going back from their decision after giving it such frank publicity.

The second announcement relates to Cammell & Co. An Odessa correspondent to one of our great London dailies wired last Wednesday that Cammell & Co. are about to establish there large works for the manufacture of edge tools, and making a specialty of files. This appears to be an exaggeration, but it is clear that the company have completed arrangements at Odessa for starting on a small scale. Files for the Russian market is the *raison d'être*, but I expect the Russian retaliatory tariff against America has expedited matters. Whether the scheme in relation to the new Russian tariff is *post hoc* or *propter hoc*, I hardly care to speculate. We may be sure, however, that if the undertaking is successful on a small scale, Cammell & Co. won't be long in widening its bounds.

Belleville Boilers.

The event of the week has been the publication of the Report on Water Tube Boilers. My forecast last week was accurate. While the Belleville boilers are condemned, the Admiralty Committee still wants water tube boilers, preferring them to cylindrical. The first three paragraphs of the report really indicate the mind of the committee:

"1. The committee are of opinion that the advantages of water tube boilers for naval purposes are so great, chiefly from the military point of view, that, provided a satisfactory type of water tube boiler be adopted, it would be more suitable for use in his Majesty's navy than the cylindrical type of boiler.

"2. The committee do not consider that the Belleville boiler has any such advantage over other types of water tube boilers as to lead them to recommend it as the best adapted to the requirements of his Majesty's navy.

"3. The committee recommend: *a* As regards ships which are to be ordered in the future, that Belleville boilers be not fitted in any case. *b* As regards ships recently ordered, for which the work done on the boilers is not too far advanced, that Belleville boilers be not fitted. *c* As regards ships under construction, for which the work is so far advanced that any alteration of type of boiler would delay the completion of the ships, that Belleville boilers be retained. *d* As regards completed ships, that Belleville boilers be retained as fitted."

A significant minority report is made by Inspector of Machinery Joseph A. Smith, R. N. He is more favorable to the Belleville boiler. He says:

"I concur with the above report, except as regards

paragraph 3, and on the point dealt with in that paragraph my report is as follows:

"1. Although the Belleville boiler has certain undesirable features, I am satisfied, from considerable personal experience, and from the evidence of engineer officers who have had charge of boilers of this type in commissioned ships, that it is a good steam generator, which will give satisfactory results when it is kept in good order and worked with the required care and skill.

"I am also satisfied from my inspection of the boilers of the Messageries Maritimes Company's steamship "Laos," after the vessel had been employed on regular mail service between Marseilles and Yokohama for more than three years without having been once laid up for repairs, that with proper precaution the excessive corrosive decay of the tubes which has occurred in some instances can be effectually guarded against.

"2. Having in view the extent to which Belleville boilers have already been adopted for his Majesty's ships, and the fact that there are now three or four other types of water tube boilers which promise at least equally good results, I am of opinion that, pending the issue of the final report of the committee, Belleville boilers should not be included in future designs. At the same time, I see no necessity for delaying the progress of ships which have been designed for Belleville boilers in order to substitute another type of boiler."

I suspect this individual report will receive more consideration from the naval authorities than the full majority report. The more technical details will be duly wrangled over by the experts. It must also be remembered that this is only the interim and not the final report.

The Tin Supply.

A valuable little table has been collated by *L'Economiste Français*. It shows the world's supply of tin. I append it:

	1899.	1900.	Increase or decrease in 1900.
	Tons.	Tons.	Tons.
Straits Settlements (exports).....	45,872	46,041	+ 169
Australia (exports).....	3,805	3,200	- 105
Banca (exports and additions to stock).....	9,934	12,843	+ 2,909
Billiton (sales).....	5,920	5,678	- 242
Bolivia (exports to London).....	4,700	4,350	- 350
Cornwall (production).....	4,013	3,910	- 103
Totals.....	73,744	76,022	+ 2,278

Nearly Thirty Years of Industrial Peace.

The annual report of the Midland Iron and Steel Wages Board is interesting reading as proving the value of conciliation in trade. Both masters and men appear to be satisfied with the sliding scale arrangement. From December 2, 1899, to February 3, 1900, puddlers' wages were \$2.25 per ton. Since February of last year wages have stood at \$2.80. Since 1872 not a single strike has occurred in the area regulated by the board. The officers of the board very naturally conclude that the principle upon which they have worked is sound, and accordingly call upon all firms in the district who still hold aloof to strengthen their hands.

The Market.

The prospect of an early termination of the South African war has slightly stimulated the market. It is even rumored that some of the Cleveland furnaces are to be blown in again. There has been an increase in the number of inquiries from buyers. The makers promptly tried to lever up prices by 25 cents, but unsuccessfully. The price of fuel must come down before any business results, and masters are clamoring for a reduction in wages. It is expected that, at the next ascertainment, wages will fall 7½ per cent. under the sliding scale arrangement. It is stated that buyers having contracts with American houses have received inducements to forego their bargains. So far as prices are concerned, they remain stationary, with, if anything, a slight tendency to approximate to market quotations. The moment the South African war is definitely terminated we may be prepared for a prompt upward movement. We must remember, however, that the economic recuperation of South Africa will be a tedious process, while in a few

weeks we shall have the budget proposals before us. These are almost certain to cause financial embarrassment and depression. It is rumored that an export duty on coal may be imposed. Personally, I don't believe it.

Another Comparison.

In view of recent developments, the following comparative table should prove interesting. The figures are reduced to metric tons, so that the comparison is in true proportion:

Output of Pig Iron in Metric Tons.

	1900.	1899.	Increase or decrease in 1900 against 1899.
			Tons. Per cent.
United States.....	14,009,870	13,838,634	+ 171,236 = 1.24
Great Britain.....	8,962,578	9,572,178	- 609,600 = 6.37
Germany.....	8,351,752	8,029,305	+ 322,437 = 4.02
Totals.....	31,324,200	31,440,117	- 115,917 = 0.37

British Cast Iron Pipes.

A report has just been issued giving details of tests made by the Dutch Admiralty. British cast iron pipes are severely handled. It is stated that British makers are careless in perfecting the coating of pipes. The result is that often the water becomes discolored and unpleasant to taste. There is serious lack of promptitude in delivering orders and no trouble is taken to oblige Dutch customers as to sizes and lengths and special forms for special purposes. German and French firms are particularly careful to meet their customers in every way and, of course, they quote in metric measurements. The percentage of breakage of English pipes is alleged to be from 5 to 10 per cent., while German, French and Belgian pipes show a breakage of from 3 to 5 per cent. Somehow, this report strikes me as a little biased.

S. G. H.

Continuous Wage Scale.—There is now no longer any doubt but that at the next annual convention of the Amalgamated Association, to be held in Milwaukee, in May, a continuous wage scale will be offered for adoption by the association. This has been insisted upon by the American Steel Hoop Company and Republic Iron & Steel Company, who desire to avoid the long shut downs in the summer months which come when the wage scale is not promptly settled.

The Harbison-Walker Company.—The Harbison-Walker Company of Pittsburgh have purchased several thousand acres of fire clay land in Carter County, Ky., on the line of the Chesapeake & Ohio Railroad, and are now contracting for the erection of an up to date plant which will be run under the name of the Harbison-Walker Company, Incorporated (Southern Department). From this plant their Southern and Southwestern trade will be supplied, because the location will give them much more favorable freight rates than can be obtained from their Pennsylvania plants. The Harbison-Walker Company are the largest manufacturers of refractories in the country, having in their Pennsylvania plants a daily output of 345,000 brick. When their Kentucky plant is completed their daily capacity will then be 405,000 brick per day.

The R. D. Nuttall Company.—The R. D. Nuttall Company, Pittsburgh, manufacturers of electric railway trolleys, gears and gear cutting and fine machine work, have appointed H. M. Lofton, 238 Equitable Building, Atlanta, Ga., as their Southern representative. Mr. Lofton is not only a well-known street railway man, but is also widely known in other mechanical lines through former prominent important positions he has held.

The Pressed Steel Car Company of Pittsburgh are establishing a new record so far as their daily output is concerned. During the week ending March 16 this company built and shipped 636 freight cars, a daily average of 106 cars. The shipments consisted of 467 hopper cars and 169 box cars.

The roll turners at Youngstown, Ohio, have organized a labor organization.

The Iron Age

New York, Thursday, March 28, 1901.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	PUBLISHERS.
CHARLES KIRCHHOFF,	-	-	-	-	-	EDITOR.
GEO. W. COPE,	-	-	-	-	-	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	-	-	-	-	-	HARDWARE EDITOR.
JOHN S. KING,	-	-	-	-	-	BUSINESS MANAGER.

The Fifth Edition of The Iron Age Index Supplement.

There will be mailed to all subscribers of *The Iron Age*, accompanying its issue of April 4, a copy of "The Iron Age Index Supplement." While the majority of our readers have learned to value this special publication, the many new subscribers have not had an opportunity to become familiar with it. Besides containing the full index of the reading matter of volume 66 of *The Iron Age*, it constitutes a handy directory of the iron, metal, hardware and machinery trades. The weekly index to the regular advertisers in *The Iron Age*, a feature first introduced by this journal about a quarter of a century ago, can only cover the principal lines of each maker and merchant represented in our advertising columns. It is a striking commentary of the variety of products of the 1200 advertisers in *The Iron Age* that a full index of their goods makes a closely printed volume of over 100 pages.

Any one who has had occasion to use trade directories has gone through the experience that they are lumbered up with obsolete or extinct firms, while such a compilation as that about to be issued embraces the really live producers and at the same time goes into a wealth of detail as to specialties which no mere general directory could hope to give attention to.

In presenting this, the fifth edition, we feel that we place before the readers of *The Iron Age* a volume whose value has been enhanced by the experience gathered during the past four years. As a purchaser's guide it is unique and unexcelled.

Contraction of Wealth and of Currency.

For some time after the South African war broke out certain financial experts in London were predicting disaster, beginning there and extending widely, on account of the stoppage of gold production in the Rand mines. This stoppage was expected to last not more than three or four months. It has extended over a year and a half. And yet that squeeze in London did not occur, and the rest of the world has scarcely had any occasion to notice that the gold production was less than for a year or two. Since the output of the metal in several countries increased, the actual net decrease was less than was anticipated, proportioned to the time, but the time has been very much longer than was anticipated. The truth is that it did not matter whether the total supply of money were a little more or a little less. The increase in the gold production has been so rapid and the stock on hand was so great that some decrease in the rate of annual addition was immaterial. So far as the expenses of the war went, they did not decrease the amount of money; they only diverted it. Without any reason it was supposed that the requirements of the Government would create a scarcity of money; but it did nothing of the kind, because the funds collected by taxes and by loans were pretty promptly paid out for wages and charters of steamers and materials of war.

But the complaint is now made in London that money is hard and that there is a prospect of its being harder, although there is a good chance also for the reopening of the Rand mines. What has happened is not a contraction of the currency, but a contraction of actual wealth. England is not so rich as she was a year or two ago. There is less money to buy with—that is, less wealth to exchange; not less currency to effect the exchange with.

The British Government has borrowed about \$400,000,000 in the last 18 months, and that and a part of the revenues raised by taxation have been destroyed, eaten up, burned up, worn out, sunk and lost. The people who advanced the money are getting interest on their investment in consols and exchequer bills; but that vast sum of money has been diverted from commerce and productive expenditure to war and destruction. But that is not the only destruction. Every holder of a consol is poorer than he was two years ago. In the latter part of March, 1899, consols were worth more than 110; early this month they were worth a little over 96. The owner cannot sell them for as much, nor can he borrow as much on them, for, as a result of various conditions, among them the increase of the national debt, buyers insist on a price at which they can get a better return for their money. Taxation has increased somewhat. The nation has got to pay in installments for the iron and steel and gunpowder and horses and mules used up in South Africa. The interest paid by the Government is not so large as the profits would have been had the cost of the war been left to percolate through industry. At the same time England has found it increasingly difficult to keep up her exports, her need of buying food and materials abroad has not decreased, and she has to send money or securities to this country to settle her current trade balances. There is money enough, but property has been destroyed.

The Widespread Use of Special Machinery.

The use of special machinery is a noteworthy feature of modern industrial development. It is the result of persistent study to reduce costs, to increase output, to make more perfect goods or to manufacture newly invented articles satisfactorily and cheaply. It has been well said that an American mechanic not only invents wonderful labor saving machines, but he also invents machinery to build the machines. This statement was never so widely applicable as it is to-day. Whether one visits implement factories, tool making shops, stove works, novelty factories or small shops making specialties he is impressed with the fact that the presiding mechanical genius of the establishment has evolved machines to greatly expedite the work at various stages or to accomplish some difficult feat in shaping metal. It is one of the peculiarities of American mechanics that in the evolution of an idea a device of totally new form may be found an essential part. When perfected perhaps no standard machine or process will produce it to the satisfaction of the inventor. It may sometimes happen that an invention cannot be utilized because it requires a part or parts too difficult or expensive to make for the purpose. Ordinarily, however, the inventor is not vanquished by such an obstacle, but proceeds further and originates a method by which his purpose is accomplished. Much is being done in this way in small shops, in which the use of special machines would hardly be expected. It can be said, however, that few metal working factories of any pretensions can be found in which the machine shop is not employed to some ex-

tent on special machines for their own use, and which are preferably built on the premises. The experimental department involves considerable expense, and much money may at times be sunk in it without an adequate return, but it is found necessary for the vitality of the enterprise. The manufacturers who do not experiment or who are not on the alert to find something better than they are using or producing are in danger of being left in the rear.

This peculiarity of our mechanics is what has given American manufactured products such an ascendancy in the world's markets. And this ascendancy they will hold until some other race or nation develops a superior faculty for originating machinery. The foreign manufacturers who have, as they believe, Americanized their plants by equipping them with the most modern American machinery, have not after all secured the secret of American mechanical success. That cannot be transferred, although it is no longer a secret. It is to be seen in practically every workshop, and its sign is the special machine.

CORRESPONDENCE.

The Liquidation of Our Foreign Trade Balances.

To the Editor: The remarks in the last issue of *The Iron Age* concerning the desirability of and the growing interest in reciprocity treaties with countries offering attractive markets for our manufactures have been emphasized by the startling statements of Hon. George E. Roberts, director of the mint, which present the subject in a new and important aspect and will repay thoughtful consideration. From an address of Mr. Roberts before the Bankers' Club of Chicago we quote as follows: "Our exports last year exceeded those of the United Kingdom, and no other country approached either. Our trade balances are so great that to attempt to collect them in cash would ruin our customers and involve the world, including ourselves, in disaster. In the last three years the aggregate has equaled all the gold in all the banks and treasuries of Europe, including the British Isles. No wonder the foreign Governments have come here to place their loans. A nation with the power to amass such credits as these becomes of necessity a trader and investor in all parts of the world. We are out to stay, for we can never bring our belongings home."

This is an aspect of the matter which has quite escaped the attention of those who have found cause for congratulation in the fact that our credit balance in foreign trade relations was so exaggerated. If we cannot collect it in money or its equivalent, it goes without saying that it must shrink because of the inability of foreign countries to continue buying unless we are prepared to accept partial liquidation, at least, in what they can produce and for which we have need. The treasuries of Europe cannot be depleted to pay for the surplus products of this favored country, and were this done the resulting conditions, instead of being advantageous to us, would be in the highest degree injurious.

It is the part of wise and liberal statesmanship to recognize the fact that trade, to be possible on a permanent basis, must be in some degree reciprocal. To discuss the abstract question of protection would now be a waste of time. No scheme of imposts could be devised which would not be to a greater or less degree protective. Great Britain has for generations been the exponent and exemplar of free trade, but there has never been a time when some of her industries were not highly protected as the incidental result of her excise system. However much her statesmen may disclaim a purpose to afford protection under a tariff adjusted with that in view, the fact remains that the result is highly protective and that colossal fortunes have been built up in industries which would have languished under any different fiscal policy. The dream of free trade is hopelessly Utopian; but there is nothing Utopian in such an adjustment of

imposts as will permit and encourage large and mutually advantageous exchanges between nations, and least of all in a scheme of commercial treaties in which such exchanges are so arranged as to help both signatory powers and hurt neither.

The conviction is growing in the minds of thoughtful students of politico-economic problems that the failure of the Senate to confirm the treaties negotiated by the State Department was a mistake, regarded from the viewpoint of the interests of the Republican party. That the administration is more intelligently reflecting public opinion in this matter than those who have blocked its plans for the upbuilding and strengthening of our foreign trade relations are doing, is evident from the events of the past few weeks. In view of the startling facts so concisely stated by Mr. Roberts, it is evident that we must expect a shrinkage of our export trade from inability on the part of foreign nations to buy our merchandise, unless we are prepared to facilitate liquidation of our credit balance through merchandise exchanges. The recognition of this fact may perhaps explain the activity of the administration in taking the initiative in negotiating treaties which would have assisted in accomplishing this object. If the manufacturers for whom this subject has immediate and vital interest employ their time to advantage during the summer, in impressing upon the minds of their representatives in the Senate the fact that they have nothing to fear from imports and everything to gain from the removal of existing obstacles to the distribution of our manufactures throughout the world, the unfinished work of the State Department will receive much more respectful consideration than it has thus far had. This subject, however, is by no means of exclusive interest to manufacturers. The farmers have a large and immediate interest in the matter, since our food exports are the most vulnerable to reprisals. Few of the foreign Governments are not to some extent dominated by agrarian influences, and these influences are all operative to oppose the admission of American farm products on favorable terms. In this country the farmer has a very practical concern in the measures proposed for checking his invasion of the French, Russian, German and British markets, and is not likely to be quite patient if sacrificed for the sake of consistency to a principle which the country has outgrown and which enlightened self interest would relegate to the limbo of dead issues. RECIPROCITY.

The Accuracy of Our Export Statistics and Countries of Destination.

To the Editor: Referring to the United States statistics of export any one familiar with the general run of our export business will observe some errors when looking over the figures issued from Washington. Take the following

Our imports from Switzerland 1899-1900.....	\$17,308,268
Our exports to Switzerland, 1899-1900	249,727

When comparing the export figures issued from Washington with the corresponding import figures issued by the Swiss Government it turns out that our exports to Switzerland are not much less than our imports from there, so there must be a grave error either on the part of our own statisticians or the part of the Swiss, which error is repeated year after year, ever since our statistics have embraced the subject of foreign trade. Further discrepancies may be found in the official report figures given for several other European countries, though in these cases the errors are not so striking.

It is true that the export statistics are built up on the statements (clearances) given by the export merchants and these statements, being each one sworn to, are fairly reliable so far as they go. But the error comes in in connection with the printed wording of the clearance blanks. The printed heading of these blanks gives to the exporter a guide as to what data are required to be filled in under the heading of the respective columns. If the heading calls for the mark and number the exporter knows that the marks and numbers of the cases are to be inserted in the respective columns. Just so when the heading calls for the contents of the cases and for the value of the goods. Again, when the heading reads:

"To be landed at," the merchant knows what he has to fill in—viz., the name of the port where the goods are to be landed. That is precisely what the merchant does, when making out his clearance, and there is where the mistake comes in. Switzerland has no seaport, so if goods are shipped for Switzerland the exporter will clear them as going to Antwerp, and when the Custom House clerks come to compile their returns that shipment will be classed in under the heading of "Exports to Belgium." The exporter has given his clearance correctly, so far as he could be expected to, to comply with the printed requirements of the clearance blank; the Custom House clerk made his returns correctly so far as he could on the basis of the clearances sworn to by the exporters. Still the result is a blunder.

In justice to the officials of the Custom House I will state that they do not go entirely by the landing place put down in the clearance. If the "mark," as appearing in the clearance gives any clue to the final destination, they go by that clue and class the goods for the respective country. So if the shipments should be marked "A. S. Zurich" the Custom House officials will class that shipment as going to Switzerland. This is the reason why Switzerland is not altogether ignored in the export column of the United States. To some extent they also go by the bill of lading. If the latter is a so-called "through bill of lading," for instance, if it reads that the goods are to go "Via Hull through to Odessa," the Custom House clerk will credit that shipment not to England but to Russia. In consequence at least a part of the shipments going to Russia are classed as such.

To make sure of the facts an exporter had some shipments for one and the same consignee marked in different ways. The one shipment was marked "A. B. Cologne," the other shipment was just marked "A. B." When tracing those cases in the regular statements published by the Journal of Commerce he found the one lot under the heading of "Shipments to Cologne," the other lot under "Shipments to Rotterdam." When compiling his returns the Custom House clerk naturally credited the one shipment to Germany while the other went to "exports to Holland," though both went to the city of Cologne.

Following up the general principle that shows forth in the above data, it is clear that such countries as have direct steamer connection with the United States are put down as receiving much more of our goods than they really do and appear as much larger customers of the United States than the facts warrant. Thus Great Britain appears to take an enormous proportion of our total exports to Europe, but the figure given for the last year of \$527,000,000 would dwindle down considerably if all shipments were deducted that merely touch Great Britain and were really intended for other countries. On the same principle the figure of \$89,000,000 given as our exports to Holland would lose by far the greater part when deducting the shipments which are merely passing through that country and are really intended for Germany. Just so the figure of \$47,000,000 given for "Exports to Belgium" would be cut down when deducting the shipments for Switzerland and for the south of Germany.

Now let us apply the point above brought out to our present imbroglio with Russia about the tariff. The Government figures state our exports to European Russia as \$7,420,000 for the year 1899-1900. In reality they were much larger. Numerous shipments go to that country by way of England, Denmark or Germany that never appear in our statistics under the heading of "Exports to Russia." A large portion of the goods intended for Russia go to Hamburg, not on a "through" but on a port bill of lading and are transhipped from Hamburg either by rail or by steamer. This is true much more in the case of articles of manufacture like steel and iron goods, than in staples like cotton, &c.

Secretary Gage has issued a statement showing that out of our total exports to European and Asiatic Russia, amounting in all to over \$10,000,000, only about \$3,000,000 were affected by the retaliation duty recently imposed by Russia, thereby intending to show that the tariff war was of small importance. These figures are

nowhere near the true figures representing American business in Russia. This large market has few seaports and during the winter months only one, "Riga," is an open port. The result is that goods are consigned to European ports of other nations and reshipped into Russia.

An exporter has at present in New York an order for steam engines bought through a London house with orders to ship to Liverpool. There is every reason to believe that these engines are to be used in Russia, as the London house is the financial end of a Russian concern, yet their orders are to ship to Liverpool, where it is more convenient to make up a cargo for shipment to Russia.

Another point is that Russian ways of doing business and Russian credits are not known to American merchants. Business is done in Russia usually on six months' time, and there is a good deal of uncertainty about credits there. A Russian concern buying machinery requires the seller to furnish a guarantee made by a home bank that he will fulfill his contract. Such handicaps affect business and induce American merchants to deal through English, Belgium, German and other houses which have connections in Russia and better facilities for doing business there. Most of these goods are marked as products of America, hence they pay the Russian tariff against American goods, but some of them, such as small articles of Hardware, have their origin lost entirely.

The main point which I wish to make is that the United States Government statistics of export are only accurate in the grand total, but when such total is analyzed and divided into exports to different countries the figures cannot be accepted. A nation's statistics of imports are always more reliable than those of export for reasons that are obvious. W. L. SAUNDERS.

28 Cortlandt street, New York, March 25, 1901.

The Braddock Machine & Mfg. Company.—A correspondent of *The Iron Age* recently visited the new plant of the Braddock Machine & Mfg. Company at Braddock, Pa. The foundry, which is fitted with modern appliances, is contained in a building of tile and iron, 100 x 150 feet, provided with plenty of light and ventilation. It contains two cupolas, a 20-ton air furnace, and is commanded by two electric traveling cranes of 20 tons capacity each, built by the Northern Engineering Works, Detroit, Mich. The foundry is so arranged that the building can be extended to double its present length, the firm already owning the necessary ground. The machine shop is 60 x 150 feet, and, like the foundry, can be extended at any time. It is commanded by an electric traveling crane, also furnished by the Northern Engineering Works. This building is of tile and iron construction, is well lighted and contains a gallery in which are the lighter tools. The shop is fitted out with modern iron working tools, and the firm will soon install a number of new tools, among which will be a 10-foot planer. The entire arrangement of the foundry and machine shops is such that all kinds of work, both heavy and light, can be handled to best advantage and at minimum cost. The Braddock Machine & Mfg. Company have just taken an order for the balance of the equipment for the wire mill proper of the Union Steel Company, at Donora, Pa., making a total of 320 wire drawing blocks furnished to this concern. They also have an order from the Union Steel Company for a galvanizing frame and have already furnished them two, together with a large number of castings and 32 barb wire machines. They recently shipped a wire drawing bench to the National Conduit & Cable Company at Hastings-on-Hudson, N. Y. They are also building 12 barb wire machines for the Sharon Steel Company at Sharon, Pa., and for C. C. & E. P. Townsend of New Brighton, Pa., a large amount of wire mill machinery. They shipped some time since to the Kokomo Wire & Nail Company, at Kokomo, Ind., a complete wire mill, and are working now on a large order for rolls, housings and other equipment for a sheet mill to be built in the West. The firm have been getting ready for some time to go into the roll business on an extensive scale, and have the equipment about ready to

make the first cast. They will make chilled and sand rolls and are prepared to make quotations on these. The Braddock Machine & Mfg. Company are builders of rod and wire mill plants, wire nail and barb wire machines, galvanizing plants, wire drawing machinery, castings, power transmission machinery, sand and chilled rolls. The officers of the concern are James A. Russell, president; John Hutzen, vice-president; S. D. Hamilton, secretary and treasurer, and E. W. Bentley, superintendent.

The Norton Emery Wheel Company.

The Norton Emery Wheel Company will erect a factory at Niagara Falls for the manufacture of artificial abrasive, to take the place of emery and corundum, used in the manufacture of emery wheels, emery paper and like purposes. The establishment of this plant will not mean that any part of the present large business of the Norton Emery Wheel Company will be removed from Worcester, Mass., but rather that it will be increased there for treatment of the raw material which will be manufactured at Niagara Falls. The use of enormous amounts of electrical energy required in the new process has necessitated a location at the greatest source of electrical power in the world. Hitherto the company have obtained their raw material from the mines and dealers in the natural material. By the new invention the company will make their own raw material, which can be produced in unlimited quantities and of uniform quality. The plant, which will be erected and operated at once, will comprise a large two-story brick building containing the electrical and other apparatus used in the manufacture of the new abrasive. It will be located near the falls, a short distance from the power house which is to furnish electricity for the Pan-American Exposition.

Emery and corundum, which this new material will replace, are used in making emery wheels, emery paper, hones, &c., and in many of the arts in large quantities for grinding and cutting purposes. They have been found as natural products in small quantities only and scattered over the earth. The largest supply of emery comes from Turkey and from the islands of the Grecian coast, notably the Island of Naxos. A considerable amount of emery has also been mined in Chester, Mass. Corundum, which is purer and harder than emery, is found in the Southern States in small quantities. It is the best and purest abrasive known except the diamond, but besides being comparatively rare, varies greatly in quality. The ruby and sapphire are forms of corundum in purest crystal. By the invention of the process to be carried on by the Norton Emery Wheel Company the finest corundum is produced with absolute uniformity and certainty. In mass it has a beautiful massive crystalline appearance, and its relationship to the ruby and sapphire can be easily recognized.

The Norton Emery Wheel Company are the sole proprietors of the process, having acquired all the rights to its manufacture, which will be carried on on a large scale. The crude material, which comes out in large masses from the electric furnaces, will be shipped to Worcester to be crushed into grains and graded. The new four-story brick building recently erected by the company at Barber's and fitted with the most modern machinery, was erected for the purpose of doing this work.

The contract for the factory building at Niagara Falls has been let to E. J. Cross of Worcester. Much of the apparatus and machinery has already been purchased, including a large 1000 horse-power transformer, which will transform the current entering the building at 2200 volts to the voltage used in the process. The apparatus is of peculiar construction and is the invention of engineers of the Norton Emery Wheel Company.

Charles L. Allen, secretary, and Aldus C. Higgins, counsel for the company, have recently returned from Niagara Falls, where they have closed the negotiations for land and power. The company expect to have their plant running at Niagara Falls by the middle of May.

The offices of the Amalgamated Association of Iron, Steel and Tin Workers have been removed from Shannon Building to Bissell Block, Seventh avenue, Pittsburgh.

PERSONAL.

George A. Baer of Reading, Pa., has been elected director of the Cambria Steel Company.

J. L. Greetsinger, long identified with the Minnesota Iron Company and quite recently appointed their president in succession to D. H. Bacon, has resigned to become president of the Brooklyn Rapid Transit Company.

Arthur Lee, who is the manager of the Cuban Department of the Flint-Eddy & American Trading Company, has just returned from Havana.

C. L. Beecher, treasurer of the Minnesota Iron Company, is to be the secretary and treasurer of the Tennessee Coal, Iron & Railroad Company.

Robert W. Hunt has just returned to Chicago from an extended tour through Mexico. He speaks enthusiastically of the capabilities of that country and of the manner in which its rich resources are being developed. He will sail from New York for England on April 3, to be gone five weeks on business.

Charles E. Graves, who has for a long time been the efficient assistant of the secretary of the Republic Iron & Steel Company, Chicago, has had the title of assistant secretary officially conferred upon him by the Executive Committee. It is a deserved recognition of the services rendered by Mr. Graves.

Jas. T. Mackay is no longer in the employ of the Patterson Tool & Supply Company of Dayton, Ohio, as traveling salesman.

James P. Kennedy has tendered his resignation as manager of the Pittsburgh district of the American Bridge Company. He will be succeeded by A. L. Shultz, who was formerly at the head of the Shultz Bridge Company of Pittsburgh. Mr. Kennedy, it is understood, will return to Youngstown, Ohio, and with other practical men in the bridge business, will organize an independent company.

R. Dumas, chief engineer of Siemens Brothers & Company of London, is now in this country for the purpose of purchasing American machinery and labor saving devices for the equipment of the English concern's electrical shops.

H. S. Manning of Manning, Maxwell & Moore, New York, has returned from a trip to Cuba.

Frederick I. Allen of Auburn, N. Y., has been appointed United States Commissioner of Patents, to succeed C. H. Duell, resigned.

E. R. Davis has been appointed superintendent of the American Steel Hoop Company's plant at Duncansville, Pa.

On the occasion of his seventieth birthday, March 23, Edwin Reynolds, general superintendent and second vice-president of the E. P. Allis Company of Milwaukee, Wis., was the recipient of a gratifying mark of esteem from the company's employees in the shape of a magnificent desk and set of mahogany office furniture. The desk, which is valued at \$1500, took a first prize at the World's Fair in Chicago, and also at the Antwerp Exposition.

C. M. Schwab, president of the Carnegie Steel Company, has agreed to provide a new manual training school for Homestead. It will replace the temporary one for which Mr. Schwab provided funds some time ago. Under a law just passed by the Pennsylvania Legislature training schools can be supported from borough school funds.

Clark W. Harrison, the European representative of the United States Cast Iron Pipe & Foundry Company, is now in this country on a brief business visit.

David E. Park, the steel manufacturer, of Pittsburgh, and others will apply for a charter for the South Side Trust Company of Pittsburgh about April 15.

At the meeting of the directors of the National Steel Company Henry Wick was elected president, to succeed W. E. Reis, and W. T. Graham has become first vice-president. R. N. Gilbert being no longer a director. F. S. Wheeler is second vice-president and has been re-elected treasurer. F. S. Wheeler, A. B. Carter and Myron C. Wick are the new members of the board.

At an interesting conference of the Get Together Club of New York on "Industrial Betterment, or Movements for Improving the Condition of the Employed," J. M. Cornell of J. B. & J. M. Cornell described the efforts being made at the West Point Foundry, W. C. Redfield of J. H. Williams & Co., Brooklyn, summarized admirably the work done at that plant, and the principles underlying the relations with the men and H. F. J. Porter of the Bethlehem Steel Company referred to the record of the works in their relations with their employees.

D. Guthrie, the London representative of the American Steel Hoop Company, has returned to his post.

William Garrett, the well-known rolling mill engineer of the Garrett-Cromwell Engineering Company, Cleveland, expects to sail for Europe next month.

O. Owen of the American Steel & Wire Company has just sailed for Europe in the interest of that concern. He will make his headquarters in London.

MANUFACTURING.

Iron and Steel.

It is probable that ground will be broken this week for the building of the new plant of the Youngstown Iron Sheet & Tube Company of Youngstown, Ohio. The plant will be located east of Youngstown, between Haselton and Struthers, where the company have secured a very large site. It is said to be well adapted for their purposes, and will have exceptional shipping facilities.

It is probable that active work will be begun this week on the new four-mill sheet plant to be built by the Youngstown Iron & Steel Roofing Company, at Haselton, Ohio. The plant will consist of four hot mills, two cold mills, a puddling mill and a bar mill.

The National Steel Company have bought a good deal more ground adjacent to the Sharon Works, at Sharon, Pa., and it is probable it will be used for making large additions to these works.

The McClintic-Marshall Construction Company, Park Building, Pittsburgh, have the contract for the steel frame work for the power station of the new Union Depot.

The two-mill plant of the American Tin Plate Company, at Johnstown, Pa., has not been operated for some time, and the equipment will be removed to some other works. Wm. Harris, formerly secretary of the Johnstown plant, has been made manager of the Monessen Works of the American Tin Plate Company, at Monessen, Pa.

Some time ago the Firth-Sterling Steel Company of Pittsburgh, whose works are at Demmler, Pa., contemplated moving their plant on account of being cramped for ground on which to enlarge their works. However, the plant will remain in its present location, as the company have made an agreement with the Pittsburgh & Lake Erie Railroad for a strip of ground west of the steel plant, and ground has been broken for a new building, which will double the capacity of the concern and furnish employment to 200 more men. The Firth-Sterling Steel Company make a specialty of turning out projectiles for the United States Government, and have now a number of large orders on hand which will give the plant several months' steady work.

Active work has been started on the new six-mill plant to be built by the Laughlin Nail Company at Martin's Ferry, Ohio. The contract for the mills and most of the other equipment was placed some time since with the Canton Foundry & Machine Company, at Canton, Ohio.

Referee E. W. Bagby, in the bankruptcy proceeding of the Paducah, Ky., Furnace Company, of which Peter Arnold of Louisville is one promoter, has issued an order instructing Trustee R. G. Caldwell to sell the property on the 30th inst., and retain the proceeds until the Circuit Court decides in the case of R. G. Caldwell, trustee, against the banks of this city, regarding the priority of claims. The banks have warehouse receipts on the iron, for the amount of which suit was brought against them by the trustee, who desires entire possession of the property. If the case is decided in favor of the plaintiff, the labor claims now pending before Referee Bagby will be given preference.

The plant of the St. Louis Steam Forge & Iron Works, at St. Louis, Mo., was destroyed by fire on the 19th inst., entailing a loss of about \$100,000, covered by \$50,000 insurance. The plant will be rebuilt at once.

Joseph Schonthal of Columbus, Ohio, has taken charge of the rail mill of the Potomac Steel Company at Cumberland, Md., by arrangement with the receiver authorized by the court. He will operate the mill for an indefinite period. It will be run to its full capacity, which is about 100 tons per day. George H. Tatnal of Pittsburgh will be superintendent and Belah Schon-

thal assistant superintendent. The plant will be in operation within ten days.

It is probable the Monessen Works of the American Tin Plate Company, at Monessen, Pa., will be considerably enlarged.

The Cambria Steel Company have awarded a contract for the construction of a water purifying plant at their new furnace at Johnstown, Pa., with a capacity of 1,440,000 gallons daily.

Machinery.

The Xander Machine & Supply Company, Limited, who recently incorporated, have opened a general machine shop and supply depot at 926-930 Bingaman street, Reading, Pa. Special attention will be given to mill and manufacturers' supplies and making brass castings to order. J. G. Xander, W. G. Schaeffer and A. J. Scharle are the parties interested.

The Wiley & Russell Mfg. Company, Greenfield, Mass., manufacturers of screw cutting machinery and tools, are extending their main machine shop 70 feet and building a new carpenter shop.

The Shaffer Machine & Mfg. Company, Baltimore, Md., recently incorporated for the manufacture of Shaffer boilers, burners, engines, steam motor cycles, &c. For the present they will use the Shaffer plant.

The Sturgess Governor Engineering Company, Troy, N. Y., have incorporated for the purpose of manufacturing a special water wheel governor and generally making a specialty of speed regulation of hydraulic power plants. They will manufacture other specialties for such power plants and will conduct a general engineering business. Pending the equipment of their own plant, arrangements have been made with existing machine works for the manufacture of the governor, but it is expected that before long they will have a thoroughly modern and well equipped plant.

The York Mfg. Company, York, Pa., manufacturers of ice making and refrigerating machinery, have purchased property on North Hartley street with frontage of 117 feet and depth of 376 feet. The foundry will be increased by a two-story addition 100 x 115 feet, the first floor being used for storage of flasks, sand, iron, &c.; the second for molding and casting. It is the intention of the company in the near future to put under cover the whole space which they now occupy, with the exception of the space covered by the jib crane in the yard. These improvements will give them a large increase of floor space and their capacity will be correspondingly increased.

The Acme Oil Engine Company, 977 East Main street, Bridgeport, Conn., have incorporated for the purpose of manufacturing kerosene oil engines. A 3 horse-power engine is now in course of construction. Five and 10 horse-power sizes will be ready in a short time.

The Maryland Foundry & Machine Company have purchased the business of the Snowden & Cowman Mfg. Company at Baltimore, Md. The plant consists of an iron and brass foundry and large machine shop, and special attention will be given to the making of all kinds of patterns, castings, machinery and repairs. Thos. P. Stran, Jr., is president and T. Frank Wilhelm manager.

The Kern County Iron Works, who recently incorporated at Bakersfield, Cal., are building a new plant, consisting of a forging shop, machine shop and foundry, for the purpose of manufacturing and repairing all kinds of oil well tools and supplies. Machinery of the latest kind will be installed, some of which has been purchased. The officers are A. W. Freeman, president; C. E. Lawry, vice-president; P. Standley Twells, secretary; R. D. Miller, treasurer; W. H. Hoxie, superintendent.

The Hamler Boiler & Tank Company, Thirty-ninth and Halsted streets, Chicago, are working full time and report orders enough ahead for five months. They have recently closed contracts for tanks for Schwarzschild & Sulzberger, the Anglo-American Provision Company, the Union Coal Tar & Chemical Company, Armour & Co., Nelson Morris & Co., all of Chicago, and the Sandusky Portland Cement Company, Sandusky, Ohio.

Wm. C. Perrin & Co., manufacturers of hydraulic and power presses, special machinery and slaughter house outfits, have just installed a 60 horse-power boiler, an induced draft outfit and several large machine shop tools. The company have recently closed a contract for equipping the slaughter house to be opened by Agar Bros., at Des Moines, Iowa. They have also received orders for 12,000 hangers and 15,000 stock rollers. They have just made large shipments of hydraulic filters and presses to various points in the Southern States.

The Kearney & Trecker Company, tool and machinery makers, Milwaukee, will locate in the vicinity of North Greenfield, Wis., near the E. P. Allis Company's tract. Plans have been prepared for a large machine shop, and work will begin as soon as the weather permits.

Walter Andrews and R. H. Glawe have organized the East River Boiler & Machine Works at Green Bay, Wis., and will at once erect a building adapted to their special use.

The Gardner Governor Company, Quincy, Ill., expect to occupy their handsome new plant in a few weeks. The buildings have stone walls, the columns and roof being of slow combustion type. There is a complete sprinkler system throughout every building. This company also make an extensive line of

steam pumps, single, duplex and compound. The air compressors they build have made some exceptionally good efficiency records.

The Boone Boiler & Iron Works, Boone, Iowa, formerly owned by W. F. Rocho, will hereafter be operated by Rocho & Nicholson. Charles Nicholson, who was in the employment of the Chicago & Northwestern Railway, has purchased a half interest.

The American Valve Company, who recently incorporated, are erecting a new plant at Coxsackie, N. Y., which will be laid out upon modern lines with all the latest improvements and adaptations for the manufacture of all types and sizes of valves, and steam and water works supplies, fire hydrants, &c. Until the new buildings are ready work will go on in temporary quarters, of which they are now in possession. The officers are Chas. W. Weller, president; Edward J. Kiley, vice-president; Edwin F. Tiel, secretary; D. Geroe Greene, treasurer; O. L. Whiteman, superintendent.

The hammer shop of the Schenectady Locomotive Works at Schenectady, N. Y., was destroyed by fire on the 23d inst. A contract has been let for a new building constructed of brick and steel, 85 x 365 feet, and until it is completed the old shop, which has been patched up, will be used. Some of the hammers are now running, and the company do not expect that the loss by fire will seriously inconvenience them in keeping up their output.

Johnson & Morton, 44 Whitesboro street, Utica, N. Y., have let the contract for a new addition to their machine shop to John T. Hughes. The firm will occupy the new shop May 1.

The Gainesville Iron Works, founders and machinists, Gainesville, Ga., have received the contract for making the castings for the new mill being built in that city for the Vesta Cotton Mills, who are moving there from Charleston, S. C.

The H. K. Porter Company of Pittsburgh, builders of light locomotives, have received a contract from the Anaconda Copper Mining Company of Montana for nine compressed air locomotives. They will have a capacity of about 15 tons each, and will be of standard gauge, so that they can be operated on ordinary railroad switches. The H. K. Porter Company have at the present time quite a number of compressed air locomotives on their floor in course of construction, covering quite a range of sizes and styles, and for quite varied service.

The Westinghouse Electric & Mfg. Company of Pittsburgh have secured from the Railroad Commissioner of Queensland, Australia, a contract to furnish the complete electrical equipment for a new railroad shop at Ipswich. Some very heavy machinery is involved in this contract.

Kansas City, Fort Scott & Memphis Railroad are building a brick addition, 60 x 60 feet, to their blacksmith shops at Springfield, Mo. The addition, including the machinery, will cost about \$25,000.

Application will be made April 8 for a change in the corporate name of the Totten & Hogg Iron & Steel Foundry Company to the George A. Hogg Iron & Steel Foundry Company. George A. Hogg is the president and principal stockholder in the company, who make sand and chill rolls, rolling mill and tin plate machinery, mill engines, &c.

It is reported that the Rogers Locomotive Works at Paterson, N. J., have been sold for \$800,000. Joseph H. Hoadley, president of the International Power Company of Providence, R. I., and several allied corporations, is said to have inspected the works last Saturday and intimated to the receivers what terms would be acceptable to the International Company. No details, however, are at present obtainable.

Foundries.

The Southern Foundry Company, a new corporation at Owensboro, Ky., with a capital of \$40,000, are building a new plant. The main building will be of brick construction, 190 x 60 feet, equipped with the latest improved machinery for the manufacture of architectural iron and iron house fronts. They are in the market for the following: Two 10 horse-power motors for alternating current; 36 x 42 inch cupola; ladles and necessary foundry tools; 28-foot span, 5-ton hand power traveling crane; Clayton air compressor and tools to operate the same. The officers are L. Freeman Little, president; Louis D. Baer, vice-president; M. F. Bransford, secretary; Jas. H. Parriah, treasurer.

The Buhl Malleable Company, Detroit, Mich., manufacturers of malleable and gray iron castings, have increased their capital stock to \$100,000, fully paid in. March 21 they broke ground for a substantial addition to their foundry, which is made necessary by increased business.

On March 10 fire damaged the foundry of Gordon & Brown at Moundsville, W. Va., to the extent of \$4500, with insurance \$2100.

Hardware.

The Ornamental Iron & Wire Company, Chattanooga, Tenn., are just finishing an important foreign contract for architectural and ornamental iron work. Some of the work is of massive iron, Mexican grille design. It is now being exhibited in Chattanooga and is generally admired. They have also completed a

large contract for iron fence for one of the county court houses of Texas. About 4000 feet of their ornamental wire fence will also be placed around a court house in Mississippi. Additions have recently been made by the company to their equipment, including a large double punch and shear machine weighing about 12,000 pounds, besides several smaller punch and shear machines, with several machines for wire fence making and various other machines for manufacturing metal products.

At a meeting of the stockholders of the Wrightsville Hardware Company, Wrightsville, Pa., held on the 18th inst., the capital stock of the company was increased from \$25,000 to \$100,000.

The Allston Foundry Company, 620 Atlantic avenue, Boston, Mass., advise us that they have recently closed a contract to furnish Walda sectional window weights for the new building of the American Cereal Company, at Niagara Falls, N. Y. This building is being erected by Norcross Bros., and will have 700 windows, requiring 85 tons of weights. It is remarked that three different sizes only of the Walda sectional weights are required to furnish the entire building.

The American Hardware Mfg. Company, New Castle, Pa., have been organized with a capital of \$100,000 for the manufacture of all kinds of brass electrical supplies. The company are composed almost entirely of local capitalists. The plant of the Keystone Plow Company has been secured and will at once be remodeled. The following are the stockholders of the company: George W. Johnson, Charles H. Johnson, Charles Matthews, John B. Brown, George W. Hartman, Charles J. Kirk, W. L. Johnston, Thomas H. Hartman, Robert K. Aiken and E. S. Whiting.

Miscellaneous.

The Railway Supply Foundry Company, Centre avenue and Fifteenth street, Chicago, manufacturers of the Roe cast iron ventilators, have closed down for repairs.

The American Bridge Company have secured the contract for the bridge over the South Shrewsbury River at Seabright, N. J. This contract includes furnishing cylinder piers and abutments, four deck plate girder spans, and one draw span 220 feet long. The bridge will have a 30-foot roadway and two 7-foot sidewalks. The contract is with Monmouth County, N. J.

The Standard Wire & Iron Works, Toledo, Ohio, manufacturers of railings, Oleson's bicycle saddle springs, heavy iron construction, &c., are equipping their plant with new machinery that they may be able to supply their increasing trade.

A. Bolter & Sons, 84 La Salle street, Chicago, have secured the contract for the architectural iron work for a large building being erected for the National Brewing Company, and for the John Marshall School, Chicago. The plant is now working overtime turning out contracts, and if the present rush continues various improvements will be made.

The S. Obermayer Company, Nineteenth and Rockwell streets, Chicago, report general activity in the foundry supply business. Among recent orders and shipments are a cupola each to the Davis Sewing Machine Company, Dayton, Ohio; to the North Alabama Engineering Company, New Decatur, Ala.; to the Davenport Foundry & Machine Company, Davenport, Iowa; three cupolas to the Union Wire Mattress Company, Chicago; a whole foundry outfit to the Wisconsin Steel Company, Cedar Grove, Iowa, and a complete foundry equipment to the Banner Iron Works, St. Louis, Mo.

The B. F. Sturtevant Company, Chicago, whose warehouse was recently damaged by fire, have begun to remodel their building, and will soon have it in shape to accommodate their large stock. They report that the general trade outlook is improving, and that they have recently closed the following contracts: Ventilating apparatus for the Insane Asylum, Cherokee, Iowa; two large induced draft outfits for the H. P. Haliday Estate, Cairo, Ill.; one induced draft outfit for the Laclede Power Company, St. Louis; one outfit for a 130-foot dry kiln for the Himmelberger & Luce Sand & Lumber Company, Morehouse, Mo., and one 1800 horse-power induced draft outfit for Stearns & Foster, Lackland, Mo.

Charles H. Bealy & Co., 10 and 12 North Canal street, Chicago, Ill., are the Western representatives and carry a complete stock of the Pecora machinery paints, which have been on the market and given excellent satisfaction since 1862. The flat steel color is in paste form for engines, tools and general machinery; the egg shell enamel finishing paint is in liquid form for engines, tools and general machinery, is dust proof in ten minutes and dries hard in 30 minutes. The Dresden machine enamel imparts a rich, glossy appearance to radiators, gas engines, &c. The iron filler is for making rough castings smooth. The Pecora blow hole cement is something new, standing under the planer, lathe, file and other finishing operations. It is dry and is worked with a knife, stands 200 degrees of heat and is gas and air tight. Free samples are sent.

At the annual meeting of the stockholders of the Carborundum Company of Pittsburgh, last week, the old board of directors were re-elected, as follows: E. C. Acheson, A. W. Mellon, R. B. Mellon, F. W. Haskell and Geo. R. Rayne. A special meeting of this company will be held May 14, when it will probably be decided to increase the capital stock and issue bonds.

The Iron and Metal Trades.

Current business in all departments is heavy, and the markets generally display a hardening tendency. Some large transactions have taken place in Foundry Irons, both East and West, Chicago noting sales aggregating 30,000 tons, while one Pipe interest took 20,000 tons in the East. It is understood that one Southern interest have booked some other large blocks. A large firm of merchants have also taken some heavy lines. The Southern makers have made a further advance, and now ask \$11.75 for No. 2, Birmingham. In the East and to a considerable extent in the Valleys and at Lake points, furnaces are being diverted from making Foundry Iron to running on Bessemer and Basic for the Steel works of the Central West. This is beginning to tell on the Eastern furnacemen, who have thus far kept far behind in raising prices, and a firmer feeling is developing.

Progress is apparently being made with the Valley furnace consolidation, options having been secured on 19 furnaces thus far.

Nothing definite has been done about Ore prices, nor is anything likely to be decided until the organization of the United States Steel Corporation is effected.

Melting is going on at a very lively rate. Reports as to the tonnage in the Cast Iron Pipe industry are very satisfactory, however uncomfortable the situation may otherwise be as to the low prices ruling. The city of Chicago has just placed orders for 11,000 tons of Cast Iron Pipe.

The current demand for all lines of finished products is enormous, and there are inquiries in the market which are significant as to the future. Thus the Western agricultural implement makers are already talking of placing season contracts for the year, beginning with July, the quantity in the case of one concern involving 35,000 tons. The Plate market has been fed with further orders, and a very heavy volume of business has been closed in Structural Iron and Steel. The long expected advance in Beams and Shapes has come, heralded as it was by a pronounced disposition to charge a premium for early delivery.

Among the aggregate of about 45,000 tons of material taken by the American Bridge Company is 20,000 tons for bridges on the Quito & Guayaquil Railroad, for delivery during this year and next. Other large export orders are shaping well.

Of course, skill in designing and in construction plays an important part in these successes in the foreign field. Where it is a question merely of simple rolling mill products the outlook for foreign business is very unsatisfactory. European makers have been meeting our competition by very sharp reductions in prices. Thus a Rail order for Canada, involving about 7500 tons, has been captured at a price of £4 10s., say \$21.75, f.o.b. Antwerp, as against our price of \$26, at mill. In other lines, too, quite some business has been done in the Canadian market by European mills.

It is worthy of note, however, that in the last few days the European markets are stronger and that higher prices are being asked. This is supposed to reflect the fact that they have, in Europe, finally made up their minds that we have been on the upward grade for some time.

Some moderate sized lots of foreign Spiegeleisen and Ferromanganese have lately been marketed in this country by importers.

A Comparison of Prices.

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type. Declines in Italics.

	Mar. 27, 1901.	Mar. 20, 1901.	Feb. 27, 1901.	Mar. 28, 1900.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$15.40	\$15.25	\$15.25	\$21.75
Foundry Pig, No. 2, Southern, Cincinnati.....	14.50	14.00	13.50	20.25
Foundry Pig, No. 2, Local, Chicago.....	15.50	15.50	14.00	23.50
Bessemer Pig, Pittsburgh.....	16.75	16.75	15.50	24.90
Gray Forge, Pittsburgh.....	14.50	14.50	14.00	21.00
Lake Superior Charcoal, Chicago.....	18.00	17.50	17.50	25.50

BILLETS, RAILS, ETC.:

Steel Billets, Pittsburgh.....	24.00	24.00	21.25	33.00
Steel Billets, Philadelphia.....	26.00	23.25	22.00	35.00
Steel Billets, Chicago.....	25.00	25.00	23.00	nom.
Wire Rods (delivered).....	36.00	36.00	35.00	nom.
Steel Rails, Heavy, Eastern Mill.....	26.00	26.00	26.00	35.00
Spikes, Tidewater.....	1.55	1.55	1.50	2.60
Splice Bars, Tidewater.....	1.35	1.35	1.30	2.60

OLD MATERIAL:

O. Steel Rails, Chicago, gross ton.....	14.00	14.00	12.50	18.00
O. Steel Rails, Philadelphia.....	16.00	16.00	15.75	23.50
O. Iron Rails, Chicago, gross ton.....	19.50	18.50	18.00	22.00
O. Iron Rails, Philadelphia.....	19.50	18.00	18.00	25.00
O. Car Wheels, Chicago, gross ton.....	16.50	16.50	16.50	24.00
O. Car Wheels, Philadelphia.....	16.50	16.50	16.50	22.00
Heavy Steel Scrap, Chicago, gr. ton.....	13.50	13.50	12.00	12.00

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia.....	1.40	1.40	1.45	2.15
Common Iron Bars, Chicago.....	1.55	1.55	1.45	2.30
Common Iron Bars, Youngstown.....	1.40	1.40	....	2.15
Steel Bars, Tidewater.....	1.55	1.50	1.45	2.50
Steel Bars, Pittsburgh.....	1.45	1.40	....	2.25
Tank Plates, Tidewater.....	1.65	1.65	1.55	2.05
Tank Plates, Pittsburgh.....	1.50	1.50	1.40	2.00
Beams, Tidewater.....	1.75	1.63	1.63	2.40
Beams, Pittsburgh.....	1.60	1.50	1.50	2.25
Angles, Tidewater.....	1.75	1.53	1.53	2.40
Angles, Pittsburgh.....	1.60	1.40	1.40	2.25
Skelp, Grooved Iron, Pittsburgh.....	1.70	1.70	1.70	1.97½
Skelp, Sheared Iron, Pittsburgh.....	1.75	1.75	1.75	2.10
Sheets, No. 27, Pittsburgh.....	3.25	3.10	3.05	3.00
Barb Wire, f.o.b. Pittsburgh.....	2.90	2.90	2.90	3.80
Wire Nails, f.o.b. Pittsburgh.....	2.30	2.30	2.30	3.20
Cut Nails, Mill.....	2.00	2.00	2.00	2.50

METALS:

Copper, New York.....	17.00	17.00	17.00	16.80
Spelter, St. Louis.....	3.72½	3.70	3.82½	4.37½
Lead, New York.....	4.37½	4.37½	4.37½	4.70
Lead, St. Louis.....	4.22½	4.22½	4.22½	4.57½
Tin, New York.....	26.15	25.40	26.50	31.50
Antimony, Hallett, New York.....	8.75	8.75	9.25	9.75
Nickel, New York.....	55.00	55.00	55.00	38.00
Tin Plate, Domestic Bessemer, 100 lbs., New York.....	4.19	4.19	4.19	4.84

Chicago. (By Telegraph.)

Office of The Iron Age, 1205 Fisher Building, {
CHICAGO, March 27, 1901. }

The control of the market is absolutely in the hands of the seller, and every day his grip seems to tighten. Prices are steadily advancing, and the supply is diminishing, while the buyer finds his wants increasing. Activity prevails in almost every branch of the Iron trade, and transactions would be larger if desired deliveries could be made. Business in Wire products is phenomenal. The Wire mills are far behind in making shipments on contracts, and no let up is indicated in the demand. The local Hardware houses are enjoying the heaviest trade they have ever known. They are having a demand from every section of the Northwest, even the districts buying freely which suffered from a crop failure last fall.

Pig Iron.—Transactions have been increasing. Foundrymen are buying freely in quantities running from 100 to 500 tons, and occasionally up to 1000 tons, mainly for delivery in the last half of the year. Some buying is being done for delivery up to June, the best of such orders coming from large consumers who find that they had not contracted for enough to cover their wants. This continues to be an interesting feature of the situation. The Malleable foundrymen are now beginning to cover their wants for the last half of the year. One such transaction has occurred, calling for about 1200 tons.

Much heavier business is expected in this line the coming week. The sales reported included one lot of 2500 tons of Southern Open Hearth Basic. An inquiry for 25,000 tons of Gray Forge Iron is exciting much interest. The total transactions of the week were from 30,000 to 40,000 tons. Local Irons are firmly held, with more transactions at the maximum than at the minimum quotations. Standard grades of Southern Irons have been marked up 25c. during the week, but some companies are continuing to make sales at former prices, although it is likely that they will shortly advance to the full schedule. We quote as follows:

Lake Superior Charcoal.....	\$18.00 to \$18.50
Local Coke Foundry, No. 1.....	16.00 to 16.50
Local Coke Foundry, No. 2.....	15.50 to 16.00
Local Coke Foundry, No. 3.....	15.00 to 15.50
Local Scotch, No. 1.....	16.25 to 16.50
Ohio Strong Softeners, No. 1.....	16.50 to 16.75
Southern Silvery, according to Silicon.....	15.90 to 16.35
Southern Coke, No. 1.....	15.90 to 16.35
Southern Coke, No. 2.....	15.15 to 15.40
Southern Coke, No. 3.....	14.65 to 14.90
Southern Coke, No. 1 Soft.....	15.65 to 15.90
Southern Coke, No. 2 Soft.....	15.15 to 15.40
Foundry Forge.....	13.90 to 14.40
Gray Forge and Mottled.....	13.65 to 13.90
Southern Charcoal Softeners, according to Silicon.....	15.00 to 17.00
Tennessee Silicon Pig.....	17.00 to 18.00
Alabama and Georgia Car Wheel.....	20.65 to 21.00
Malleable Bessemer.....	16.00 to 16.50
Standard Bessemer.....	17.00 to 17.50
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	17.50 to 18.00

Bars.—Business in this line is heavy. The buying is well distributed, coming from all classes of consumers. The car builders and other interests connected with railroads are especially noticeable among the buyers. Agricultural Implement makers are beginning to test the situation, and are asking prices for a year's supply, beginning with the coming July. One of these inquiries is for 35,000 tons. It is stated that some good contracts of this character have already been placed. Sellers of Bar Iron report little difficulty in securing business at advanced prices. Carloads of Bar Steel have been sold at 1.65c. for early delivery. The demand for special qualities of Bar Iron is strong, and the buyers are not disposed to haggle much over the prices asked. Mill shipments are quoted at 1.55c. to 1.60c., Chicago, for Bar Iron or Soft Steel Bars, and 1.90c., base, for Hoops. The largest manufacturers are pursuing a conservative policy, and are endeavoring to take care of their customers at present prices, although it would appear to be an easy matter to mark them up considerably higher. Jobbers report an extraordinary demand from stock. They are having increasing trouble in endeavoring to keep up assortments, having a continued call for sizes which they cannot furnish. An interesting development to buyers of small lots is the establishment by leading manufacturers of a differential or extra rate of \$1 per ton for mill shipments of quantities less than 1 ton and more than 1000 lbs.; \$3 per ton for less than 1000 lbs. and more than 500 lbs.; \$5 per ton for 500 lbs. or less. This differential also applies when carload lots are ordered containing small quantities of several sizes. Small lots from stock are quoted at 1.90c. to 2c. for either Iron or Steel Bars, and 2.20c. to 2.25c., base, for Hoops.

Car Material.—The car builders and railroad companies continue to purchase large quantities of material for building cars; the demand from this source seems unending.

Structural Material.—Inquiries continue to increase in number and quantity, but the large building operations projected in this vicinity are strangely held back. More projects are steadily coming up, however, and when contracting begins it is now more than likely a very heavy tonnage will be placed. The ordinary demand for small lots has been fair. The material for a large Steel grain elevator to be built here has just been purchased, amounting to about 2000 tons of Plates and a considerable quantity of Structural Shapes. An Eastern mill booked an order for 2000 tons of Plates. Other transactions are reported, involving a good tonnage. The demand for mill shipments is thus very good, while trade from store continues to increase. Mill shipments are quoted as follows: Beams, Channels and Zees, 15

inches and under, 1.65c.; 18 inches and over, 1.75c.; Angles, 3 inches and over, 1.55c.; Angles, under 3 inches, 1.70c. rates; Tees, 1.70c.; Universal Plates, 1.55c. to 1.60c. Small lots of Beams and Channels from local yards are quoted at 2.10c. to 2.25c.; Angles, 1.90c. to 2c. rates, and Tees, 2.05c. to 2.15c.

Sheets.—A surprisingly good demand is experienced for mill shipments. The high prices made have not seriously checked business, although that is stated to have been the purpose of the manufacturers in their last advance. Mill shipments of No. 27 Black are quoted at 3.35c., Chicago, the quotation made last week having been an error. Galvanized is maintained at 70 per cent. off. Jobbers report an excellent trade, which keeps their stock moving out as rapidly as fresh shipments are received. Small lots from stock are quoted at 3.50c. to 3.60c. for No. 27 Black; 65 and 10 to 70 per cent. off for Galvanized; 3.85c. for Wood's Smooth; 3c. for No. 18; 2.65c. for No. 16; 2.50c. for No. 14; 2.35c. for No. 12, and 2.25c. for No. 10.

Merchant Pipe.—The demand is very brisk, with prices held squarely up to quotations. Manufacturers' prices, random lengths, are as follows:

	In carloads.	Less than carloads.
	Blk. Galvd.	Blk. Galvd.
1/4 to 1 1/2 inch and 11 to 12 inches.....	59.2 46.2	54.9 40.9
3/4 to 10 inches.....	66.7 53.3	61.9 49.9

Boiler Tubes.—Manufacturers have advanced their prices 10 per cent., but the jobbers have not yet made any change in quotations from stock. We quote as follows:

	Steel.	Iron.
1 to 2 1/2 inches, inclusive.....	50	40
2 1/2 inches.....	50	42 1/2
2 3/4 to 5 inches.....	60	50

Cast Pipe.—The city of Chicago purchased 11,000 tons the past week, and Milwaukee will buy about 1500 tons this week. A good demand from other cities for small quantities has been enjoyed. The gas companies are purchasing freely. Notwithstanding the advancing tendency of Pig Iron the prices of Pipe are held down to a low level.

Rails and Track Supplies.—Manufacturers of Light Rails are advancing their prices \$2 per ton on Sections lighter than 40 lbs. Heavy Sections, however, are still maintained at the old price of \$26. The contracts for Heavy Sections entered during the week aggregated 8000 tons. The demand for Light Rails continues brisk. Track Fastenings are in excellent demand, and some manufacturers are asking higher prices. Splice Bars are quoted at 1.50c. to 1.60c.; Spikes, 1.80c. to 1.85c.; Track Bolts, with Hexagon Nuts, 2.55c. to 2.60c., and Square Nuts, 2.40c. to 2.45c. Much higher prices than these are asked for shipments of single carload lots or small lots from stock.

Billets.—A good sale of Axle Billets is reported at \$26 for shipment in September and October. The demand for small quantities of Billets is sharp, and buyers are willing to pay for them as high as 1.50c. per lb.

Merchant Steel.—Quite a little demand has sprung up for early delivery, while some placing of contracts is beginning for the coming season. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 2c. to 2.10c.; Smooth Finished Tire, 1.85c. to 2c.; Open Hearth Spring Steel, 2.30c. to 2.40c.; Toe Calk, 2.40c. to 2.60c.; Sleigh Shoe, 1.85c. to 1.90c.; Cutter Shoe, 2.40c. to 2.60c.; Cold Rolled Shafting, 55 off. Ordinary grades of Crucible Tool Steel are quoted at 6c. for carloads and 7c. from store; Specials, 13c. upward.

Old Material.—The market is stronger, although it is claimed that the dealers are the main factors in its strength. They are purchasing Material in competition with mills, expecting, of course, to be able eventually to sell it to these mills at higher prices. This always precipitates an interesting struggle, which sometimes ends in favor of the seller and sometimes in favor of the buyer. Meanwhile, prices are certainly a little stronger. Cast Scrap is decidedly strong, and some other

grades are likewise showing considerable stiffness. The following are approximate quotations per gross ton:

Old Iron Rails.....	\$19.50 to \$20.50
Old Steel Rails, mixed lengths.....	14.00 to 14.50
Old Steel Rails, long lengths.....	16.00 to 16.50
Heavy Relaying Rails.....	20.00 to 22.00
Old Car Wheels.....	16.50 to 17.00
Heavy Melting Steel Scrap.....	13.50 to 14.00
Mixed Steel.....	11.00 to 11.50
No. 1 Busheling.....	10.00 to 11.00
No. 2 Busheling.....	9.00 to 9.50

The following quotations are, per net ton:

Iron Fish Plates.....	\$16.50 to \$17.00
Iron Car Axles.....	18.50 to 19.00
Steel Car Axles.....	15.00 to 15.50
No. 1 Railroad Wrought.....	15.00 to 15.50
No. 2 Railroad Wrought.....	13.00 to 13.50
Shafting.....	15.00 to 16.00
No. 1 Dealers' Forge.....	12.00 to 12.50
Iron Axle Turnings.....	9.50 to 10.00
Soft Steel Axle Turnings.....	8.50 to 9.00
Machine Shop Turnings.....	8.00 to 8.50
Cast Borings.....	3.75 to 4.00
Mixed Borings, &c.....	4.00 to 4.50
No. 1 Boilers, cut.....	9.50 to 10.00
No. 2 Boilers, cut.....	7.50 to 8.00
Heavy Cast Scrap.....	12.00 to 12.50
Stove Plate and Light Cast Scrap.....	8.50 to 9.00
Railroad Malleable.....	11.50 to 12.00
Agricultural Malleable.....	11.00 to 11.50

Metals.—Lake Superior Copper is steady at 17.50c. for carload lots, while Casting brands are a trifle higher at 17.25c. Pig Lead is unchanged at 4.32½c. for Desilverized and 4.42½c. for Corroding in 50-ton lots.

Coke.—A brisk trade is being done with all classes of consumers, many of whom are making contracts for their supply the last half of the year. Standard Connellsville Coke is very firm, and can probably not be had less than \$4.85 to \$5 for 72-hour Foundry.

Philadelphia.

Office of *The Iron Age*, Forrest Building, {
PHILADELPHIA, PA., March 28, 1901. }

The situation in Iron and Steel is somewhat improved, but the change in prices is very trifling. The majority of sellers are asking an advance of 25c. per ton on Pig Iron, but buyers seem to get all they want at the old prices, so that it is somewhat exceptional to effect sales in quantity at advanced rates. Billets are practically any prices that holders see fit to name, and Sheets are pretty much in the same category, as the mills are all sold ahead as far as they are willing to quote. Bars are doing something better, and a meeting of the Eastern Bar Iron Association is to be held during the week, the object being to perfect arrangements by which a little more money can be had, the increased cost of Scrap making some adjustment an absolute necessity. General business is in excellent condition, and all the indications point to further improvement as the season advances. The output of Pig Iron is, however, undoubtedly on the largest scale ever known, and it is probably this that prevents prices from stiffening, as they would under other conditions. Basic and Bessemer Pigs are still in demand for the West, but everything is pretty well taken up, so that nothing more is likely to be done during the immediate future; sales last week having been on the basis of \$14 to \$14.25 at furnace for Basic, and about \$1 more for Standard Bessemer.

Pig Iron.—There is a stronger undertone, but prices are little if anything beyond what they were a week ago. It is true that some makers are quoting 50c. to 75c. above the market, but they are selling no Iron in this district; but they get equivalent to the quotations named by shipping to other points. There is plenty of Iron to be had, however, if not at the old figures, so near to them as to make very little difference to the buyer, and the indications for early or decided improvement are not very distinct. This is a curious feature considering not only that a heavy tonnage of Iron is being diverted elsewhere, but in addition almost equally large quantities have been taken from local furnaces and shipped to the Central West. This was commented on last week and during previous weeks, but as the same conditions are still in force repetitions are unavoidable if the market is to be reported correctly and up to date. A very general attempt has been made to put No. 2 X to about \$15.75, delivered at nearby points, but it has met with meager success, and \$15.25 to \$15.50 seems to be

all the market will stand. Ordinarily a very quick response might be expected under such conditions as now rule, but it does not materialize, and that is about all that can be said about it. Several thousand tons of Bessemer have been sold by a local furnace for Western shipment, and more would be taken if it could be had at about \$15, f.o.b., but there is no more available for reasonably prompt shipment. The following quotations fairly represent the market for ordinary transactions, seaboard or nearby points: No. 1 X Foundry, \$16 to \$16.25; No. 2 X Foundry, \$15 to \$15.50; No. 2 Plain, \$14.25 to \$14.75; Standard Gray Forge, \$14 to \$14.50; Ordinary Gray Forge, \$13.50 to \$13.75; Basic (Chilled), \$14 to \$14.25, and Standard Bessemer, \$15 to \$15.25 at furnace.

Billets.—The scarcity of Steel is still very marked, and firm offers to sell are hard to secure. Probably \$26.50 might be done if makers could arrange satisfactory deliveries, but mills appear to be all full until well on toward midsummer. Special Steels are wanted, but it is very difficult to place orders on satisfactory terms.

Plates.—There is no change in the Plate situation. The demand shows no abatement, and full prices are readily obtained, but as in most other lines it is difficult to arrange for reasonably early deliveries. Prices for the present are as follows for seaboard and nearby points: Plates, ¼-inch and thicker, 1.65c. to 1.70c.; Unversals, 1.65c. to 1.70c.; Flange, 1.75c. to 1.85c.; Charcoal Iron Plates, C. H. No. 1, 2.25c.; Best Flange, 2.75c.; Fire Box, 3.25c.

Structural Material.—Conditions show no change of importance, but it is evident that the mills are very crowded with work. Quotations are as follows, for seaboard and nearby points: Angles, 1.75c. to 1.85c.; Beams and Channels, 15-inch and upward, 1.75c. to 1.85c.

Bars.—The demand is fairly heavy, and as there is a great deal of Skelp wanted manufacturers think they ought to get better prices for Bars, particularly with the high prices ruling for Scrap Iron. It is understood that a meeting of the Eastern Association is to be held this week with a view of taking this phase of the situation into consideration. Meanwhile, however, prices remain at last week's figures—viz., for seaboard, as follows: Iron Bars, 1.40c. to 1.50c.; Steel Bars, 1.55c. to 1.65c.

Sheets.—It is almost impossible to give quotations, as mills are so full of work that as a matter of self protection they are unwilling to tie themselves up any further, particularly with such unsettled prices for Steel. Nominally the following quotations are given, but there is no guarantee that orders will be accepted unless for small lots. Prices are about as follows for best Sheets (common Sheets two-tenths less): No. 10, 2.35c.; No. 14, 2.55c.; No. 16, 2.75c.; Nos. 18-20, 3.25c.; Nos. 21-24, 3.35c.; Nos. 26, 27, 3.40c.; No. 28, 3.60c. to 3.65c.

Old Material.—There is a good demand, with Choice Melting Steel selling up to \$17; Old Rails \$20 to \$20.50; Iron Axles at \$23, and Steel at \$18. Prices are about as follows, delivered in buyers' yards: Choice Railroad Scrap, \$19.50 to \$20.50; No. 1 Yard Scrap, \$13 to \$14; No. 2 Light Scrap, \$12 to \$13; Machinery Cast, \$14 to \$14.50; Heavy Steel Scrap, \$16 to \$16.50; Old Iron Rails, \$19.50 to \$20.50; Old Steel Rails, \$16 to \$16.50; Wrought Turnings, \$12 to \$12.50; Cast Borings, \$8 to \$8.25; Old Car Wheels, \$16.50 to \$17; Iron Axles, \$22 to \$23; Steel Axles, \$17 to \$18.

Cincinnati. (By Telegraph.)

Office of *The Iron Age*, Fifth and Main streets, {
CINCINNATI, March 27, 1901. }

Rosy is the word which correctly defines the situation in the Pig Iron market at this writing, and as far as investigation is possible there is no thorn accompanying it. Business during the week just past was excellent. Every agency in the business here express themselves as perfectly satisfied with the result of the week's work. Saturday's business was especially heavy in view of the fact that a rise of 25c. was bulletined for Monday. This rise took place according to schedule, making the basis

\$11.75, Birmingham, for No. 2 Foundry. Tuesday's telegrams and mail show that this rise has not seriously interfered with the buying movement and quite a number of orders ranging from 2000 to 4000 tons were booked. The buying has been pretty well distributed through all the grades of Southern Iron, Northern being just at this moment a little in the shadow. As far as Southern Irons are concerned, there appears to be but one price quoted, and for the first time in many months there is absolute uniformity, something remarkable. Authorities here are expressing the hope that prices will go no higher at this time, as they believe it would be against the best interests of the trade at large to boom figures much above the present level. The buying has covered second and third quarters of the year pretty generally, although, of course, there are yet a number of inquirers who are likely to buy for that term. Freight rate from Birmingham is \$2.75 to this point; from Hanging Rock district, \$1. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	to \$15.00
Southern Coke, No. 2.....	to 14.50
Southern Coke, No. 3.....	to 14.00
Southern Coke, No. 4.....	\$13.25 to 13.50
Southern Coke, No. 1 Soft.....	to 15.00
Southern Coke, No. 2 Soft.....	to 14.50
Southern Coke, Gray Forge.....	13.25 to 13.50
Southern Coke, Mottled.....	13.25 to 13.50
Ohio Silvery, No. 1.....	17.00 to 17.50
Ohio Silvery, No. 2.....	16.00 to 16.50
Lake Superior Coke, No. 1.....	15.50 to 15.75
Lake Superior Coke, No. 2.....	14.50 to 14.75
Lake Superior Coke, No. 3.....	13.50 to 13.75
Southern Basic.....	14.50 to 14.75

Car Wheel and Malleable Irons.

Standard Southern Car Wheel, chilling grades.....	\$18.75 to \$19.25
Standard Southern Car Wheel, No. 2.....	17.75 to 18.25
Lake Superior Car Wheel and Malleable.....	18.50 to 19.00

Plates and Bars.—On the basis of last week's quotation the market has been quite active and strong, in some instances quotations are made 5c. higher on Bars, but as a rule prices are unchanged. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.55c., with half extras; in small lots, 1.75c., with full extras. Steel Bars, in carload lots, 1.52c., with half Steel card extras; Base Angles, in carload lots, 1.75c.; Plates, 1.80c. for ¼-inch and heavier; Sheets, No. 10, 2.05c.

Old Material.—The market is strong and healthy with but little variation in last week's quotations. Dealers' buying prices per gross ton are, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$15.50; Cast Railroad and Machine Scrap, \$11; Old Iron Axles, \$16.75; Iron Rails, \$18; Steel Rails, rolling mill lengths, \$13; Short Lengths, \$12; Car Wheels, \$15.

St. Louis. (By Telegraph.)

Office of The Iron Age, 1205 Chemical Building, {
St. Louis, March 27, 1901. }

Pig Iron.—Aggregate sales of Pig Iron are reported as fairly heavy for the week. There have been some orders running from 400 tons to one of 1000 tons, the latter being for the St. Louis Blast Furnace Company's product. As buying continues furnace agents fear that more furnaces will be reported sold up. Small foundrymen are actively buying, and while watching the market closely, are taking few chances on future supplies. Because of the advances in rolling mill products it seems easier to make sales of Pig Iron to concerns who also buy Bars and Sheets than to foundrymen whose operations are confined to the cupola and molding room. From the business now being entered up it is clear, however, that the trade are beginning to realize that higher values are being obtained. Another 25c. advance occurred on March 23, and as previous advances only seemed to whet the appetite of buyers, it is expected the present one will prove no check to closing additional negotiations. Connellsville Coke is in steady demand, and its consumption is a key to the activity prevailing in Pig Iron using industries; \$5.15 is the East St. Louis quotation on Foundry Coke. We quote, f.o.b. St. Louis:

Southern, No. 1 Foundry.....	\$15.25 to \$15.50
Southern, No. 2 Foundry.....	14.75 to 15.00
Southern, No. 3 Foundry.....	14.25 to 14.50
Southern, No. 4 Foundry.....	13.75 to 14.00
No. 1 Soft.....	15.25 to 15.50
No. 2 Soft.....	14.75 to 15.00
Gray Forge.....	13.50 to 13.75

Bars.—Demand for all mill products is enormous and inquiries are piling up daily. The mills who have in the past been reported out of the market on Bars are not yet in position to handle new business. In other products no extended contracts are encouraged, orders generally being accepted for such delivery as mills can make. Thus far orders cover visible needs, no disposition being seen to buy in a speculative way. Difficulty is had in getting Sheets and Plates from mills, particularly of the lighter gauges from 14 to 28. Mill prices on Iron and Steel Bars have been moved up about \$1 per ton, 1.60c. to 1.65c., half extras, at East St. Louis, being present prices. Jobbers' prices are 1.75c. to 1.80c., full extras, carloads, and 1.80c. to 2c., full extras, in small lots.

Rails and Track Supplies.—Track improvements are being vigorously carried forward on nearly every line in this territory. The demand for Track Supplies is lively and purchasing agents are clamoring for deliveries. Consumers now want to buy ahead, but it is said that mills will not book future business. We quote Steel Splice Bars, 1.55c. to 1.65c.; Bolts, with Square Nuts, 2.40c.; with Hexagon Nuts, 2.50c.; Spikes, 1.75c. to 1.85c.

Pig Lead.—There is a strong demand for Pig Lead, but no boom evident. Missouri producers in some cases are sold up to May, and as a result of uniform buying on a steady market Missouri brands are quoted at 4.22½c. to 4.25c.; Desilverized at 4.32½c.; Lead Ore, \$46.50 per ton.

Spelter.—It is thought that the maximum consumption of Spelter is now under way. Producers claim to be amply able to take care of the present demand. It is claimed, however, that producers in the gas belt held from 5000 to 6000 tons of Spelter at the beginning of the year, and that it has all disappeared with the exception of about 1000 tons, which belongs to speculators. There is pronounced inquiry this week for Spelter, no improved prices resulting therefrom. We quote Spelter at 3.72½c. to 3.75c. Zinc Ore sold at \$27, but higher offers were refused by holders of higher grades. There is renewed rumor of a smelter and rolling mill being established in the Joplin district.

Birmingham.

BIRMINGHAM, ALA., March 25, 1901.

The Iron market not only held its own at the advance it scored the preceding week, but at the close of the week another advance of 25c. was added. The first half of the week the buying was not active, as operators were not satisfied that values would hold. With the stronger feeling that prevailed in Western markets this idea was dispelled and buyers inaugurated a movement that became active. Some large foundry interests that had been waiting for a decline joined in the awakened demand and several round lots were placed. Added to these was a good contingent from the army of small buyers. It required a good deal of figuring on the part of sellers, on the large orders, as to ability to make desired deliveries, and in some cases extension of time was made to secure acceptance of order. In other cases amounts were scaled down to meet ability to accept order. The sales in amount were larger than those of the preceding week. Gray Forge sold at \$10.25, and later in the week it sold at \$10.50. On Saturday one order for 10,000 tons at \$10.25 was scaled down to 3000 tons and accepted. The same day another order for 5000 tons each of No. 3 Foundry and No. 2 Soft at \$11 and \$11.50 was accepted. Some No. 4 Foundry sold at \$10.25 and some at \$10.50. No. 2 Foundry sold mainly at \$11.50, although on small orders \$11.75 was the current value. The market at the end of the week closed strong and was marked up 25c. It is betraying no confidence to state that if there is fair buying this week the price will be advanced another 25c. per ton. On a basis of \$12 for No. 2 Foundry sellers would be willing to let the market have a good rest. There is a general feeling that this price will not be detrimental to business. Quotations are now as follows: Gray Forge, \$10.50 to \$10.75; No. 4 Foundry, \$10.75 to \$11; No. 3 Foundry, \$11.25, and No.

2 Foundry, \$11.75. Basic Iron is \$11.75, and at this price some was sold the past week, but it is hard to get. It is well to state that a considerable portion of the sales being made cover the last half of the year. It was a good week also for Steel, and the sales were as free as sellers desired. The territory was wide from which orders came, and the business done was restricted by capacity of mill. Friday 3000 tons, mainly billets, sold at \$21. In efficiency of working and in character of output there is now no complaint at the mill. Negotiations have been pending for some time with parties who desire to erect a Hoop mill, and lately terms acceptable to the mill have been agreed upon, and we can now state that this new industry is assured. There is another also "on the boards" that will be another feeder to the mill.

There are rumors afloat again of changes to occur in the management of the Sloss-Sheffield Company. The absence of the only officials of the company here who would be likely to know of it prevents official confirmation. But the information comes from such a source that one feels justified in using it. The *on dit* is that Mr. Hopkins, the president of the company, finds his health breaking down and that he is not equal to the great strain that such a responsible position carries with it, and he desires to give up his burden. Ex-Governor Johnston is named as his successor. Some years ago he filled the position for a period of time, so the duties and the responsibilities of the position would not be strange to him.

Negotiations are pending between certain interests of some importance looking to a consolidation under one management. The negotiations have not yet reached that stage of definiteness that warrants the statement of successful conclusion. Should they be successfully concluded, additional furnace capacity to the district will result. A new company, financed by New York capital and officered by New York people, has been formed and will build and operate a furnace. Its location has not yet been determined upon. Tuscaloosa is offering inducements for its location. It will probably be located at some favorable point between this place and Tuscaloosa.

At the new cement works at North Birmingham they are starting off with very favorable prospects. The quality of the cement made from the furnace slag is established and there is a ready market for it. The selling price is \$2 per barrel at the mill. A contract for 30,000 barrels to go to New Orleans has been concluded. This company will erect in the near future four lime kilns on the property they own, each having a capacity of 150 barrels per day, and will add the making of lime to their business. Abundance of lime rock is at their door, running 97 per cent. of carbonate of lime, and they have bored down in the deposit 200 feet without reaching the bottom. Other new enterprises are being constantly added to our list of industries and we are forging ahead at a very gratifying rate.

Pittsburgh.

Office of *The Iron Age*, Hamilton Building, Pittsburgh, March 27, 1901.

(By Telegraph.)

Pig Iron.—The deal for the consolidation of the mercantile blast furnaces in the two Valleys, the Pittsburgh and Cleveland districts is making progress, and while considerable time will be required, it is probable the consolidation will be put through on some basis. It is possible, however, that a few of the 24 furnaces that it was originally intended to include in the consolidation may decide to stay out. The Pig Iron market is fairly active, and the price of Standard Bessemer is firm at \$10 at furnace; for spot up to \$16.25 has been paid. The demand for Bessemer Iron in the last week has not been quite so active as in preceding weeks. Hubbard Furnace of the Andrews & Hitchcock Iron Company, at Youngstown, and the stack of McKeefrey & Co., at Leetonia, have changed from Foundry to Bessemer. It is probable that a leading interest will be in the market before long for a round lot of Forge Iron. The Foundry Iron market is likely to be improved by the fact

that more furnaces in the Valleys will change from Foundry to Bessemer. Northern Gray Forge is held at \$13.75 at furnace, or \$14.50, Pittsburgh. Southern Forge can be bought at \$14.25 to \$14.40, Pittsburgh. We quote Standard Bessemer at \$16 at furnace, or \$16.75, Pittsburgh; for Gray Forge, \$13.75 at furnace, or \$14.50, Pittsburgh; No. 1 Foundry, \$15.75; No. 2, \$15.25; No. 3, \$14.75, all f.o.b. Pittsburgh. We note a sale of 5000 tons of Bessemer Iron for April and May at \$16 at furnace. Three leading consumers bought last week close to 50,000 tons of Bessemer, delivery running up to July, at about \$16 at furnace. We note a sale of 2000 tons of Southern Forge at \$15.15, at Pittsburgh, made a few days since. Also a sale of 100 tons of No. 2 Foundry and one of 50 tons at \$15.25, Pittsburgh.

Billets.—The minimum price of Bessemer Billets, 4 x 4 inch, is \$24, Pittsburgh. We note a sale of 500 tons at that price. For prompt Steel \$1 to \$2 premium would probably have to be paid. Sheet and Tin Bars are held at \$1 a ton above Billet prices. Sales of odd lots of Basic Open Hearth Billets, Carbons running 0.25 to 0.40, have been made at prices from \$28 to \$30, Pittsburgh, for prompt shipment.

Muck Bars.—Mills rolling Muck Bars are holding Standard grades at about \$27, Pittsburgh. Some of the dealers who bought Bar when prices were lower, are offering it at \$26.50, Pittsburgh.

(By Mail.)

Aside from the advance of \$2 a ton made in Beams and Channels, and \$4 in Angles, by the Beam Association to-day, the market as regards values is about the same as last week. Round lots of Bessemer Iron were sold last week at \$16, at furnace. Bessemer Billets are \$24 to \$25, Pittsburgh, depending on delivery, while odd lots of Open Hearth, Carbons running from 0.25 to 0.40, have sold at \$28 to \$30, Pittsburgh. Finished Material is very firm, but no higher. Consumers are buying cautiously, believing that the top of the market has been reached. We may state that it is as much the desire of the mills to keep prices from going any higher as it is of consumers. At present values there is a very handsome profit in making Iron and Steel, and to put prices up still higher would be to invite the danger that usually comes from a boom market. The demand for material is heavy and of large volume. The mills are well filled up, some of them being practically out of the market as sellers, and the present situation, both as regards the running of the mills and prices, seem assured up to July 1. Buyers are not placing material for delivery beyond that period, not knowing what may happen in the second half. The Valley furnace deal is progressing, and options have been secured on 7 of the 24 stacks. The deal must be put through by May 1 or it is off. Premiums continue to be paid by buyers where prompt shipment is desired. Mills that are able to make early delivery usually get from \$1 to \$2 a ton advance over prices on contracts for long time delivery.

Ferromanganese.—We continue to quote at \$62.50 in carload lots, delivered at buyer's mill, for 80 per cent. domestic or foreign Ferro. An advance in this material is expected at any time.

Structural Material.—The heavy demand, together with the advancing market on raw material, has brought about an advance in Structural Material, prices on which were put up \$2 a ton to-day by the Beam Association in New York, while Angles were advanced \$4. There is now a uniform price on all material, except Tees, which take an advance of \$1. A good deal of foreign work is being done, one recent order calling for nearly 20,000 tons. Some local work, involving a good deal of tonnage, has recently been placed. The bridge and structural shops all over the country are full of work, while the mills have all they can do for the next two or three months. We quote the new prices, as follows: Beams and Channels, up to 15-inch, 1.60c.; over 15-inch, 1.70c.; Angles, 3 x 2 up to 6 x 6 inch, 1.60c.; smaller sizes, 1.55c. to 1.60c.; Zees, 1.60c.; Tees, 1.65c.; Steel Bars, 1.45c. to 1.50c., base, half extras, at mill; Universal and Sheared Plates, 1.50c. to 1.60c., the latter for

prompt delivery. All the above prices are f.o.b., Pittsburgh.

Sheets.—The advance of \$3 a ton made in price of Sheets by the leading interest does not seem to have checked the demand to any extent, which continues very heavy. Very few, if any, of the outside Sheet mills are able to make prompt delivery, having their output pretty well booked up to July. The leading interest quote No. 27 Black Sheets, box annealed, one pass, at 3.25c.; No. 28, 3.35c., in carload lots. Jobbers who can ship out promptly from stock are able to sell in carload lots at these prices. We quote Galvanized Sheets at 70 and 5 per cent. off, at maker's mill, in carloads. Some of the jobbing trade are holding Galvanized at 70 off, in carload lots, for prompt delivery.

Bars.—The demand for Bars, both Iron and Steel, continues active, and the market is very firm. The absolute minimum price on Steel Bars is 1.45c., with some of the leading mills holding firm for 1.50c., base, in carload lots. Mills rolling Iron Bars are very busy, and prompt deliveries are hard to get. We quote Common Iron Bars at 1.40c., at mill, and Refined Iron Bars, from selected stock, at 1.60c. to 1.65c., base, f.o.b. maker's mill.

Plates.—A heavy tonnage in Plates from some of the shipbuilding interests is expected to be placed before long. The Plate mills are full of work, but where a mill is in position to make prompt delivery it can usually get 1-10c. advance over base price. We quote: Tank quality, $\frac{3}{4}$ -inch and heavier, 1.50c.; 3-16 inch, 1.55c.; under 3-16 inch and above No. 10, 1.60c.; Flange or Boiler Steel, 0.1c. advance over the base of Tank; Marine and Fire Box, American Boiler Manufacturers' Association specifications, 0.2c. advance over Tank; Still Bottom Steel, 0.3c. advance over Tank; Locomotive Fire Box Steel and equivalent specifications, 0.5c. advance over Tank, all f.o.b. Pittsburgh.

Merchant Steel.—A good deal of tonnage is being placed, which, with old contracts, keeps the mills filled up to the limit. Prices on some grades of Steel are higher. We quote: Plow Slabs, $\frac{1}{4}$ -inch and heavier, 1.60c., base; Tire, 1.50c.; Toe Calk, 1.75c.; Bessemer Machinery Steel, 1.40c.; Smooth Finished Steel, 1.75c.; Rolled Lay Steel, 2.75c.; Hammered Lay Steel, 3.50c.; Plow Slabs, 1.80c.; Cold Rolled and Cold Drawn Shafting, 55 per cent. off in carload lots, 50 per cent. in less than carload lots, delivered in base territory. Tool Steel, 7c. and upward, according to quality. On Tool Steel freight is allowed east of the Mississippi River.

Skelp.—In the Skelp market it is largely a question of delivery, and mills that are able to ship out either Iron or Steel Skelp promptly can get very high prices. Sales of Steel Skelp in round lots to large consumers, but for prompt shipment, have been made at 1.70c. to 1.75c., Pittsburgh. About the same prices are quoted on Grooved and Sheared Iron Skelp for prompt shipment.

Tubular Goods.—The market is very firm, and some of the smaller mills are quoting higher prices than the leading interest. Jobbers are also quoting higher, especially for prompt delivery. Prices to consumers in small lots are as follows:

Merchant Pipe.		Per cent.	Per cent.
		Black.	Galvd.
$\frac{1}{4}$ to $\frac{3}{4}$ inch and 11 to 12 inch.....		61	48
$\frac{3}{4}$ to 10 inch.....		68½	56
Casing, Random Lengths.		S. & S.	I. J.
2 to 3 inch.....		58	53½
3¼ to 4 inch.....		63	59
4¼ to 12½ inch.....		65	61½
Casing, Cut Lengths.		S. & S.	I. J.
2 to 3 inch.....		53½	59
3¼ to 4 inch.....		59	55
4¼ to 12½ inch.....		61½	57½
Boiler Tubes.		Up to 22 feet.	
Steel.		Per cent.	
1 inch to 1¾ inch and 2¾ inch to 5 inch, inclusive....		68½	
2 inch to 2½ inch, inclusive.....		63	
6 inch and larger.....		62	
Iron.			
1 inch to 1½ inch and 2½ inch.....		49½	
1¾ to 2¼ inch.....		45	
2¼ inch to 3 inch.....		57	

It should be noted, however, that prices to jobbers are from 5 to 7½ per cent. less than those given above.

Iron and Steel Scrap.—Some kinds of Scrap are very scarce, and prices are higher. There is a good demand for nearly all kinds of Scrap, and the market is very firm, with a decided upward tendency. We quote No. 1 Railroad Wrought Scrap at \$16.50 to \$17, net ton; Bessemer Melting Stock, \$16.50 to \$17; Low Phosphorus Melting Stock, \$19 to \$20; Old Iron Rails, \$20 to \$21, and very scarce. Busheling Scrap is \$14 to \$15, gross ton, and Old Steel Rails, \$17 to \$17.50. Sales of several hundred tons of Bessemer Melting Stock are reported at \$16.50, Pittsburgh. Also sales of round lots of Steel Rails for remelting, at \$17 to \$17.50, Pittsburgh.

Coke.—Last week there were 19,964 ovens in the Connellsville region active and 1799 idle, the output having been 229,677 tons. There is a heavy demand for both Furnace and Foundry Coke, and the leading interest are practically out of the market as sellers, having their entire output under contract. We quote strictly Connellsville Furnace Coke at \$2 and Foundry at \$2.50 a ton. Main Line Furnace Coke is held at \$1.75 and Foundry at about \$2.10 to \$2.25 a ton, at oven.

The Pittsburgh Engineering Company have removed from 320 Fourth avenue to Room 207 Lewis Block, Pittsburgh.

J. W. Rhodes & Co., Murtland Building, Pittsburgh, have been appointed selling agents for the special high grade Globe Silvery Iron, made by the Globe Iron Company, Jackson, Ohio. The silicons in this Iron range from 5 to 12 per cent.

Cleveland.

CLEVELAND, OHIO, March 26 1901.

Iron Ore.—The Dock Managers and the representatives of the Longshoremen's Union came to an understanding this week regarding the wages to be paid for unloading Ore during the season. The Ore shovellers are to receive 13c. a ton, a reduction of 1c. from last year, and are to be paid 25c. an hour for overtime, 12 hours to constitute a day's work. The hoisters and engineers have accepted a reduction of \$5 a month. The members of the Ore Association have been in the East all week, and the understanding is that they have been in conference there. The news has been received, however, that nothing has been done toward establishing the prices. This may be accomplished at a meeting in this city the latter part of the week. The labor questions which have agitated the marine men have all been settled, except that with reference to the engineers, and the horizon being practically clear in that respect, the effect is reflected in the freight talk. With the prospect of fair dispatch for the boats, the shippers are counting on being able to force the Ore freights down, by having recourse to so much tonnage with which to move the product. Discussion now indicates that the rates may be established soon, between 75c. and 80c. a ton.

Pig Iron.—The reports of a possible combination of the Merchant furnaces in the Valley and in Cleveland have unsettled the market to a very large extent, and have stopped the advances which were made seemingly with great regularity recently. All prices have been at a standstill for ten days, and the market generally has quieted down. Furnace capacities are well sold up for the present, and the supply of Bessemer and Basic is taken care of until July 1, allowance being made for shrinkage due to accident or other causes. The little surplus that occasionally makes its appearance is bringing good prices, Bessemer being sold at \$16.50, at the furnace, and Basic at \$16. Foundry Irons are in good demand, with a fair supply. About the same conditions prevail as to Scotch. The prices quoted are Foundry No. 1, \$15, and No. 2, \$14.50. No deliveries are offered short of a month. All of the furnaces are running full blast and the output is very large.

Finished Material.—Persistent rumors of an advance in the price of Shapes created a very large amount of business this week. Old contracts which have been pending for weeks were closed, and those who have had projects in mind, but were uncertain as to them, have

come to a conclusion very quickly and rushed upon the market to supply their needs. The material for five buildings has been purchased this week, the tonnage aggregating 7500 tons. All of these are to be started upon at once. Among other buildings to be erected are those for the Brown Hoisting & Machinery Company, plans for which have been accepted, and the work will be started upon immediately. Bars are unsteady, a number of prices being quoted and paid; but 1.45c. probably accurately represents the market. The demand for Rails is steady and heavy. An inquiry has been noted this week for 2500 tons for a suburban electric line which is being constructed in Northern Ohio. The price has not changed. One lot of 800 tons has been sold to electric lines, which seem to be consuming most of the available product of the mills now, the steam lines having closed for amounts covering their needs some time ago, and are now applying orders on their former contracts.

Old Iron.—The demand for Scrap is still brisk and the market is advancing slightly. No. 1 Wrought has been marked up \$1 a ton, but other prices remain as they have been. The market is represented in the following quotations: No. 1 Wrought, \$17.50, net; No. 1 Cast, \$13, net; Old Iron Rails, \$21, gross; Old Steel Rails, \$16, gross; Car Wheels, \$19, gross; Cast Borings, \$6.50, net; Wrought Turnings, \$10, net.

New York.

Office of *The Iron Age*, 232-238 William street,
New York, March 27, 1901.

Pig Iron.—There has been more inquiry and a number of sales have been closed. Report has it that one Pipe interest has purchased 20,000 tons. Southern makers have again advanced prices and are not relatively but absolutely higher than Eastern makers, some of whom, however, show a disposition to demand more money. A good deal of capacity has been diverted from Foundry Iron to Bessemer and Basic for Western delivery. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, \$16.50 to \$17.50; No. 2 X, \$15.25 to \$16; No. 2 Plain, \$14 to \$14.50; Gray Forge, \$14 to \$14.50; Tennessee and Alabama brands, No. 1 Foundry, \$16 to \$16.25; No. 2 Foundry, \$15.50 to \$15.75; No. 1 Soft, \$16 to 16.25; No. 2 Soft, \$15.50 to \$15.75; No. 3 Foundry, \$14.25 to \$14.50; No. 4 Foundry, \$13.75 to \$14; Gray Forge, \$14 to \$14.25.

Cast Iron Pipe.—A good run of small orders continues. During the lettings in the near future will be one for 750 tons for Worcester, Mass., and 850 tons for Pittsfield, Mass. Prices remain \$23 to \$24 at tidewater per gross ton.

Steel Rails.—Quite a number of fair sized orders have been placed, the aggregate for all the mills being estimated at 35,000 tons for the week. A Canadian order for 7500 tons has gone to Europe at 90 shillings, f.o.b., Antwerp. Some very low foreign quotations are also being made in the Mexican market. We quote \$26 for Standard Sections, and \$32 to \$32.50 for Girder Rails. We quote Spikes, 1.55c. to 1.60c.; Splice Bars, 1.30c. to 1.35c.; Square Track Bolts, 2.05c. to 2.10c., and Hexagon Bolts, 2.15c. to 2.20c., at mill.

Finished Iron and Steel.—During the week considerable foreign business has been placed. This includes, by the American Bridge Company, 20,000 tons for the Quito and Guayaquil railroads, to be delivered during this year and next. The first lot, of five bridges, is to be shipped in four or five weeks. There have also been closed a number of bridges for the Jamaica Government railways, and for Cuba, a railroad bridge for the Sandwich Islands, and buildings for Mexico and Australia. Locally, we note the closing of the contract for the new Stock Exchange Building, involving about 3000 tons, and for the new Gowanus Canal power house of the Brooklyn Heights Railroad Company, calling for a like tonnage. Prices for Structural Shapes have been advanced 0.1c. per pound, while Angles have been advanced 0.2c. per pound, and are now equal in price with Beams, &c. Tees are 1.80c., New York. We quote as follows at tidewater: Beams, Channels and Zees, 1.75c. to 1.80c.;

Angles, 1.75c. to 1.80c.; Tees, 1.80c. to 1.85c.; Bulb Angles and Deck Beams, 2c.; Sheared Steel Plates are 1.65c. to 1.70c. for Tank, 1.75c. to 1.80c. for Flange, 1.88c. to 1.90c. for Fire Box. Charcoal Iron Plates are held at 2.25c. for C. H. No. 1, 2.75c. for Flange, and 3.25c. for Fire Box. Refined Bars are 1.45c. to 1.50c.; Common Bars, 1.35c. to 1.40c.; Soft Steel Bars, 1.50c. to 1.55c., and Hoops, 1.90c. to 2c., base, on dock.

Metal Market.

Office of *The Iron Age*, 232-238 William street,
New York, March 27, 1901.

Pig Tin.—Owing to the fact that stocks are well concentrated in one hand the spot market saw a slight upward movement during the last week. From 25½c. of last week the market was slowly advanced to 26.15c., which was the closing price to-day. Spot and March are quoted 26.15c. to 26.45c., and April is quoted 25.80c. to 26c. It is claimed, however, that outside of the Metal Exchange smaller orders are accepted at slightly lower prices. The London market closed to-day £116 7s. 6d. for spot, and £114 for futures. To-day's Banca auction sale went at a very low price, the average being 66% florins, or about 24½c. c.i.f., New York. This is the lowest price on record since January, 1899. The sale consisted of about 2500 tons, an unusually large amount.

Copper.—There is no change in the market. The demand is still said to be rather light, and prices are still held to the nominal figure of 17c. for Lake and 16½c. for Electrolytic. That these prices are artificial is admitted in all sections of the trade, and the opinion generally expressed can be summed up in the words, "How long will they be able to continue the accumulation of stock?" On the other hand the arguments of the producers who control the situation is that the demand is being supplied, and they would be unable to sell more metal, even though they should lower the price. London has advanced somewhat, and closed to-day £69 10s. for spot and £70 for three months' futures. Best Selected is quoted £75 15s. The exports are showing up even less favorably than was expected. Thus far this month only 5600 tons went out, while 2600 tons arrived.

Pig Lead.—The demand for this article is exceedingly light at present. On all sides business is reported dull. The American Smelting & Refining Company have not changed their prices, and still quote 4.37½c. for Desilverized, f.o.b. New York, and 4.32½c. St. Louis. The London market has gone up a shade and is quoted to-day £13 6s. 3d. The suit against the American Smelting & Refining Company to prevent the acquisition of the Guggenheim interest has just been reviewed by the Court of Errors of the State of New Jersey. A decision is expected on Thursday.

Spelter.—Is weak, and demand outside of the large consolidation is said to be not very active. The large companies are reported to be ordering very freely in anticipation of the spring galvanizing trade. The market is quoted here at 3.85c. to 3.90c., and it is said that sales from the West were made during the week from 3.87½c. to 3.90c., with sellers at the former figure. St. Louis is quoted 3.70c., nominal, and London has advanced to £16 7s. 6d.

Antimony.—There is no change. Hallett's is quoted 8¾c. to 9c., and Hungarian 8¼c. to 8½c., and Cookson's nominally 10¼c.

Nickel.—The position of the article is unchanged, the prices are still quoted 55c. to 60c. for ton lots.

Quicksilver.—There is no change; prices quoted are \$51 per flask of 76½ lbs. for lots of 50 flasks and more. The London market is unchanged at £9 2s. 6d.

Tin Plate.—It is said that a good demand characterizes the market. Prices are unchanged; the American Tin Plate Company quote on a basis of \$4.19 per box of Standard 100-lb. plates, f.o.b. New York, and \$4, f.o.b. mill. Deliveries at these prices can be had until June 1.

Aaron Hirsch & Sohn of Halberstadt, Germany, have just issued their highly valuable annual statistical report on Copper. The firm are represented in this country by L. Vogelstein of 62 and 64 William street.

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING MARCH 27, 1901.

Cap'l Issued.		Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.	Closing	Sales.
\$29,000,000	Am. Car & Foundry, Com.	24½-24½	25½-27½	26½-27	26½-27½	25½-27	26 -27	27	58,700
29,000,000	Am. Car & Fndry, Pref. §	75¼-77½	78 -80½	79½-80	79¼-80½	79 -79¾	79½-80¼	80½	29,700
19,000,000	Am. Steel Hoop, Com....	41¼-42½	41½-42½	-42½	42 -42½	41 -42¼	41½-42½	42¼	9,500
14,000,000	Am. Steel Hoop, Pref. §	91½-92½	91½-92½	91¼-92¼	92½-93¼	92 -92½	92¼-92½	92½	11,900
50,000,000	Am. S. & W., Com.....	42½-43½	42½-43½	42½-43	42½-43	42 -42½	42½-43¼	43¼	13,200
40,000,000	Am. S. & W., Pref. §	108 -108½	107½-107½	106½-107½	106½-107	106½-107	-107	107½	5,100
28,000,000	Am. Tin Plate, Com., N. Y.	70½-70½	70 -70½	-70½	70½-71	69 -70¼	69½-70½	70½	8,700
18,325,000	Am. Tin Plate, Pref., N.Y. §	-114	.....	114 -114½	.....	114½-115	115½-115½	115½	2,000
7,500,000	Bethlehem Iron.....	-62	.....	.....	.....	.....	.....	.....	110
15,000,000	Bethlehem Steel.....	-18½	-18½	-18½	.....	-18½	-18½	.....	750
7,974,550	Cambria Iron, Phila.*	.....	.....	-45½	-45½	-45½	.....	.....	325
16,000,000	Cambria Steel**	17½-17½	-17½	16½-17¼	16½-17	-16¾	15¾-16¾	16	6,670
11,000,000	Colorado Fuel & Iron....	47¾-49½	49 -50¼	50½-52	51¼-52½	50¾-52¼	51¼-55½	55¼	30,300
24,410,900	Crucible Steel, Com.....	.....	.....	.....	.....	.....	.....	.....	.....
24,399,500	Crucible Steel, Pref.....	.....	.....	-83½	.....	-82½	-82	82	400
46,484,500	Federal Steel, Com.....	48¼-49	48½-49½	48½-49	48¾-49½	47½-48¼	48¼-48¾	48¾	13,900
58,253,000	Federal Steel, Pref. §	101 -101½	101¼-102	100½-101	100¾-101½	100¾-101½	101 -101½	101½	14,200
15,000,000	International Pump, Com.	30½-31	30¾-31	31¼-32	32½-33¼	32½-33¼	32¾-32¾	32¾	9,400
12,500,000	International Pump, Pref.	-81	81 -82½	82½-82½	82½-83½	83¼-84	83 -83½	83	2,300
11,000,000	International Silver.....	6¼-6½	6¼-6½	6¼-6½	-6½	-6½	6¼-6½	6½	2,000
32,000,000	National Steel, Com., N.Y.	52¾-53½	52½-53	-52¾	52½-52½	51 -52	52 -52½	52½	7,800
27,000,000	Nat. Steel, Pref., N. Y. §	113¼-114	113½-114	-113½	-114	-113½	.....	.....	4,500
40,000,000	National Tube, Com., N.Y.	60¼-61	60 -60¼	-60¼	60¼-61	59½-60½	59½-60¼	60¼	7,000
40,000,000	Nat. Tube, Pref., N. Y. §	114 -114½	114 -114½	.....	-114	-113½	113½-114½	114½	6,300
5,000,000	Penna., Com., Phila.....	-78	.....	.....	.....	.....	.....	.....	100
1,500,000	Penna., Pref., Phila.....	.....	.....	.....	.....	.....	.....	.....	.....
12,500,000	Pressed Steel, Com.....	35 -36	36 -36¼	-36½	-36½	36 -37	37 -37½	37	2,600
12,500,000	Pressed Steel, Pref. §	-76½	75½-76½	74½-75	-75½	77½-80	79½-80¼	79½	6,500
27,191,000	Repub. Iron & Steel, Com.	16¾-17	16¾-17	17 -17½	16½-17½	16½-17	16½-17½	17½	6,800
20,306,900	Repub. Iron & Steel, Pref. §	66¾-67	67 -67½	67¼-68	68 -68¼	68¼-69	68¼-69½	69½	11,065
7,500,000	Sloss-Sheffield S. & I. Com.	26½-27½	27½-29	-30	30 -32	30¾-32	-33½	33½	4,700
6,700,000	Sloss-Sheffield S. & I. Pref. §	-73¼	74 -77½	-74¼	.....	-75	.....	.....	1,200
20,000,000	Tennessee Coal & Iron....	56 -57½	56½-57½	56¼-57	55½-57½	55 -56½	56 -57½	57	23,000
1,500,000	Warwick I. & S. (par \$10)	-7	-7	-7	-7	-7	.....	.....	980
10,000,000	Am. Bicycle Co., Com.....	6 -6¼	.....	.....	.....	.....	-6¼	6¼	300
20,000,000	Am. Bicycle Co., Pref....	28 -28¾	-28½	.....	-28½	.....	.....	.....	700
.....	Am. Bicycle Co., Bonds..	-80	-79½	.....	79 -80	79½-79¾	.....	.....	71,000

§ 7½ Non-Cu. 17½ Cu. ++ 6½ Non-Cu. ++ Par \$50, \$1 paid in.

* Par \$50. ** \$10.50 per share paid in. † 6½ guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph. ‡ Ex-dividend.

Bonded indebtedness: Am. S. & W., \$130,856; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., \$2,000,000 6½ debenture 60-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., \$9,822,000 Illinois 5½, \$7,417,000 E. J. R. R. 5½, \$1,800,000 Johnson 6½, \$6,732,000 D. & I. R. R. 5½, \$1,000,000 2d D. & I. R. R. 5½, \$10,000 land grant D. & I. R. R. 5½; National Steel, \$2,561,000 6½; National Tube, none; Tennessee C. I. & R. Co., \$8,367,000 6½, \$1,114,000 7½, \$1,000,000 7½ cu. pref.; Pennsylvania Steel, \$1,000,000 7½, Steelton, 1st, 1917, \$2,000,000 5½; Sparrow's Point, 1st, 1922, \$4,000,000, consolidated, both plants; Bethlehem Iron, \$1,351,000 5½ maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none; Colorado Fuel & Iron Co.; Col. Fuel Co. Gen. Mort. 6½ \$880,000, Col. Coal & Iron Co. Mort. 6½ \$2,810,000, Col. Fuel & Iron Gen. Mort. 5½ \$2,308,000. Also outstanding \$2,000,000 preferred stock on which dividends have been paid to June 30, 1900. Sloss-Sheffield St. & I. Co., Sloss I. & S. first mortgage 6½, \$2,000,000, Sloss I. & S. general mortgage 4½, \$1,885,000.

Iron and Industrial Stocks.

The steel stocks have shown comparatively little animation, and so far as the United States group is concerned only minor fluctuations. Of course, in the absence of an official record of transactions in the United States Steel stocks, which are still dealt in on the curb, it is impossible to judge whether interest has transferred itself largely to that single stock. During the week the Sloss-Sheffield issues have had quite a rise, and United States Cast Iron Pipe has shown some movement. Pressed Steel preferred has gained quite notably during the last few days, and a sudden jump has taken place in Colorado Fuel & Iron.

	Bid.	Asked.
American Bridge Company, common.....	46	46½
American Bridge Company, preferred.....	100½	100¾
American Sheet Steel, common.....	41¾	41¾
American Sheet Steel, preferred.....	91	92
E. W. Bliss, common.....	130	.....
E. W. Bliss, preferred.....	125	.....
Cramp's Shipyard stock.....	.....	.....
Diamond State Steel.....	5¼	5½
Dominion I. & S. Co.....	37	.....
Empire Iron & Steel, common.....	5	9
Empire Iron & Steel, preferred.....	39	45
National Enam. & St., common.....	21	23
National Enam. & St., preferred.....	80	84
New Haven.....	4¾	4¾
Otis Elevator, common.....	28½	29½
Otis Elevator, preferred.....	92½	93½
Tidewater Steel.....	6¼	6½
U. S. Cast Iron Pipe Co., common.....	7	8
U. S. Cast Iron pipe Co., preferred.....	38	40
U. S. Projectile.....	110	.....
Va. C. I. & C., stock.....	3½	4½
Va. C. I. & C. bonds.....	39	40
H. R. Worthington, preferred.....	110	114
American Tin Can, common.....	25¼	25½
American Tin Can, preferred.....	75	75½
American Tin Can, subs.....	100	101
United States Steel Cor., common.....	42¼	42¾
United States Steel Cor., preferred.....	92¼	92½
United States Steel Cor., subs.....	107	.....

Empire Iron & Steel Company.—The annual report of the Empire Iron & Steel Company for the year ended December 31, 1900, as submitted at the recent annual meeting of the stockholders shows:

Net profits from all sources.....\$408,436.71
Extraordinary repairs and renewal fund..... 57,517.86

Total.....\$350,918.85
Allowance for depreciation of raw materials..... 140,000.00
Balance.....\$210,918.85
Dividends on preferred stock..... 106,395.00

Balance profit and loss account.....\$104,528.85

The report further states that the net working capital increased during the year about \$45,000, without allowing for new securities purchased. The balance sheet shows an increase in profit account of \$104,528.85, in real estate, plants and machinery of \$174,396.43; in stocks and bonds account of \$137,596.85; in cash in banks of \$9295.15, and in inventories of \$14,503.27. Of the company's 12 furnaces nine are now in blast.

Announcement has been made by J. P. Morgan & Co. that the syndicate underwriting the American Bridge Company have disposed of all their stock, and that accordingly all holders of trust receipts may now obtain the certificates of preferred and common stock of the American Bridge Company.

It is announced that the floating indebtedness of the Cambria Steel Company incurred in connection with new construction has been funded into \$3,500,000 5 per cent. notes, maturing \$350,000 each six months on and after June 15, 1903.

A call has been issued to the stockholders of the Danville Bessemer Company, which contains the following statement: "A special meeting of the stockholders of this company will be held on April 3, 1901, at 11 o'clock a.m., at the office of the company, 417 and 419 Market street, Camden, N. J., for the purpose of receiving the report of the Board of Directors, as to sales made of the property of the company, the present assets of the company, and to consider their recommendations as to distribution of a part of the cash assets and their

plan for engaging the remaining cash in the manufacture of finished staple articles. A reduction of the capital stock will also be considered."

The date of the annual meeting of the Crucible Steel Company of America has been changed from the third Wednesday in July to the third Wednesday in October.

Dividends.—The American Bridge Company have declared a quarterly dividend of 1¼ per cent. in their preferred stock, payable April 24. Books close April 10 and reopen April 25.

The American Sheet Steel Company have declared the regular quarterly dividend of 1¼ per cent. on their preferred stock, payable April 15. Books close April 5 and reopen April 16.

The United States Projectile Company have declared the regular quarterly dividend of 2 per cent. and also an extra dividend of 2 per cent., payable April 1.

The Washburn Wire Company have declared a dividend of \$1.75 per share on the preferred stock, payable April 1.

The directors of the Union Switch & Signal Company of Pittsburgh last week declared the regular quarterly dividend of 1 per cent. on the common and 2 per cent. on the preferred stock, payable April 10.

The directors of the Westinghouse Air Brake Company of Pittsburgh last week declared the regular quarterly dividend of 2½ per cent., and an extra dividend of 3½ per cent., the same as declared in December. Both are payable April 10.

The Natural Gas Company of West Virginia have declared the regular quarterly dividend of 1½ per cent. and an extra dividend of 2½ per cent.

The American Smelting & Refining Company have anticipated the payment of their dividend of 1¼ per cent. on the preferred stock, which was declared payable April 9. There were rumors that the payment of this dividend was to have been enjoined and this action was taken in justice to the stockholders.

A New Tin Plate Plant.

(By Telegraph.)

PITTSBURGH, PA., March 27, 1901.—The W. H. Griffiths Company of Washington, Pa., organized to build a tin plate mill at Waynesburg, Pa., have already placed orders for the machinery required—namely, engines, boilers, hot and cold mills. It is the intention of the concern to build a six-mill plant, three of which they expect to have ready for operation by September 1. The building for the hot mills is 90 x 310 feet; the pickling department, 60 x 60 feet; the tin house, 80 x 75 feet, and the warehouse, 100 x 50 feet. The product of the plant will be coke and bright plates exclusively. The equipment, as far as it relates to machinery and power, is the same as in the present mills of the Waynesburg Forge Sheet & Tin Plate Mills, at Waynesburg, Pa., and the Washington Charcoal Iron Tin Mills, at Washington, Pa. A contract has been made for the sale of the entire product of the new plant to be built at Waynesburg, extending over a period of three years at prices listed on the market price of tin plate as fixed by the American Tin Plate Company. W. H. Griffiths, who is the active head of this new concern, is president of the Waynesburg Forge Sheet & Tin Plate Mills and the Washington Charcoal Iron Tin Mills, which have five tin mills at Washington, two tin and two sheet mills, with two more tin mills building at Waynesburg, and the six mills of the Griffiths Company at Washington, making a total of 17 mills operated by the three concerns, of which W. H. Griffiths is the president.

The Structural Workers' Wages.—PITTSBURGH, PA., March 27, 1901.—The American Bridge Company and the George A. Fuller Company of Pittsburgh have signed the wage scale of the International Association of Bridge and Structural Iron Workers, which calls for a wage rate of 40 cents an hour and nine hours a day. A year ago this class of men received 27½ cents an hour and worked ten hours a day.

OBITUARY.

WILLIAM M'CULLOUGH.

William McCullough, one of the pioneer tube manufacturers of Pittsburgh, died after a short illness on March 22, at his home in Allegheny, Pa., aged 80 years. Mr. McCullough was born and educated at Shousetown, Pa. In 1843 he went to Pittsburgh and entered the firm of Jones & Quigg, whose iron and steel plant was one of the largest in the city at that time. When Mr. McCullough left the firm and joined A. M. Byers in 1867 the former firm disbanded and sold their works. During the years after the Civil War, when trade was dead, the firm of Byers, McCullough & Co. were one of the few who weathered the trying times and shared in the wonderful prosperity which followed. The firm soon had a world wide reputation for pipe and tube manufacture. Mr. McCullough remained with Mr. Byers until 1876, when he retired from active work, although he still remained in connection with several business institutions in Pittsburgh. He is survived by two sons and three daughters.

NOTES.

HENRY WARING PALMER, treasurer of the Palmer Hardware Company, Savannah, Ga., died suddenly at his home in Savannah, February 8. Mr. Palmer was born at Darien, Ga., in 1852, but moved to Savannah in early youth, where he received his education. He commenced his business career as a clerk in the employ of Palmer & Deppish, hardware dealers in Savannah, in the year 1868, and remained with them until their dissolution in 1877, caused by the death of Mr. Deppish. The firm of Palmer Bros. succeeded them in that year, and H. W. Palmer was made a partner in the new firm. This firm (Palmer Bros.) were incorporated as the Palmer Hardware Company in the year 1890. H. W. Palmer was made treasurer of the new company, and remained in that office until his death.

ERNEST G. JOURDAIN, for many years with Wetherell Bros., steel merchants, Boston, Mass., as traveling salesman and who was very well known among manufacturers in New England, particularly in the State of Connecticut, died at Hamilton, Bermuda, March 2, where he had gone in search of renewed health. His body was brought home and interred at Boston, the funeral services being held at Allston, March 8. Mr. Jourdain was 46 years of age and had been associated with Wetherell Bros. for more than 20 years.

The Valley Blast Furnace Employees.

The employees of the blast furnaces in the Mahoning and Shenango valleys have demanded an increase in wages, to take effect April 1. The demand was embraced in a communication addressed to the blast furnace owners, as follows: "At a meeting of representatives of the workmen of the several furnaces in the Mahoning Valley, held in Youngstown, it was agreed that we demand a uniform rate of wages throughout the entire valley, and that we are justified in demanding an increase of 10 per cent. over present wages, or as follows, after April 1, 1900: Engineers, \$2.50; keepers, \$2.50; top fillers, \$2.25; water tenders on furnace and boilers, \$2.15; fillers, \$2; helpers, \$2; cinder yard men, \$2; foremen, \$2; iron carriers, per ton, 14 cents; common labor, \$1.50."

It is not improbable that the demand will be granted, in view of the fact that the price of pig iron has materially advanced within the last two months.

The Shelby Steel Tube Company.—At a meeting of the directors of the Shelby Steel Tube Company, held at Cleveland, it was decided to retain the main offices of the company at Cleveland, for the present at least. The sales department was separated into two divisions, with headquarters at New York and Chicago. All inquiries and orders west of New York, Pennsylvania, West Virginia, Virginia, North and South Carolina, Georgia and Florida will hereafter be attended to by the Chicago office. The accounting and purchasing department will remain at Cleveland, but there is reason to believe that the main offices will ultimately be moved to Chicago.

The New York Machinery Market.

Office of *The Iron Age*, 222-224 William street,
New York, March 27, 1901.

In the smaller lines of machine tools there has been a decided lull in demand during the week under review. Inquiry has fallen off somewhat and the purchasing was scattered and consisted only of small lots. While there has been no quotable change in prices values have receded slightly, inasmuch as that purchasers were able to obtain slight concessions, where a week ago they were met with a comparatively stiff market.

In heavy engines, boilers, pumping engines and power plant accessories business is in an excellent condition. The principal shops are well fitted with work and inquiries point to a number of very large projects that are soon to be closed. In this direction the activity finds its center in the Western States. Several good sized refrigerating plants are projected for the East.

It is stated in the street that the Standard Air Brake Company intend moving to more commodious quarters and increasing their equipment of machinery to a large extent. The plant of the company is now located on the corner of Green and Bay streets, Jersey City. The New York offices are located at 168 Broadway. The company were recently organized with a capital stock of \$2,000,000. Their present plant, which was equipped about four years ago, contains a number of good tools. The new building, which is to be much larger than the present one, it is said, will be located on Lafayette street, Jersey City. J. & W. Seligman & Co., the New York banking firm, compose the syndicate who are financing the company.

There is considerable talk among the large railroads of building new car shops. It is said that plans are actually under way for extensive operations in this direction by the prominent roads of the East and West. The finishing touches are being given to the new boiler house which the Pennsylvania Railroad is building at Altoona, Pa. It is said that as soon as this work is completed operations will be instituted in the direction of new shops to be located at Altoona.

Work is now actually under way on the new plant of the American Car & Foundry Company at Detroit, Mich. Pressed steel cars are to be built at the new plant. The works were laid out by Westinghouse, Church, Kerr & Co., who have just been awarded the contract for the entire equipment of power and transmitting machinery, piping, &c. The plant is expected to be in a condition for operation by next June. Westinghouse, Church, Kerr & Co. are preparing plans for a power house and transformer stations for the Grand Rapids, Grand Haven & Muskegon Railway, who are building an extensive electric system in Michigan. The main line is to be 40 miles long, connecting Grand Rapids and Muskegon. There will be a branch of about 6 miles to Spring Lake. It will be a third rail, high tension line. The power station will develop about 3000 horse-power at the start.

Hooven, Owens & Rentschler have just closed several important contracts from their local offices. From the Rochester Railway Company they have received an order for a 1500 horse-power cross compound engine which will be direct connected to a General Electric generator. To the Columbus, Buckeye Lake & Newark Traction Company of Ohio and the Columbus, London & Springfield Railway of Columbus, Ohio, they will furnish four 1200 horse-power cross compound Corliss engines. They also received an order from the Hudson River Power & Transportation Company of Mechanicsville, N. Y., a 1000 horse-power compound rope drive engine. It will drive a generator, which is to furnish alternating current. A small, simple Corliss was sold to the American Watch Company for their new factory at Reading, Pa.

J. H. Siegrist, Jr., Company, 253 Broadway, New York, have received an order for three 1000 horse-power vertical cross compound engines from the Queens County Electric Light & Power Company, Astoria, N. Y.; also for two 800 horse-power vertical cross compound engines for the Anheuser-Busch Brewing Association, St. Louis, for their new electric power station. The Federal Lead Company, St. Francois, Mo., have recently placed their order for one 16 x 36, also one 16 and 32 x

48 tandem compound engine. The Singer Mfg. Company, Elizabethport, N. J., have just placed an order with the Siegrist Company to equip their power plant with the Siegrist system of automatic lubrication.

The Fuel Economizer Company, whose New York office is located at 74 Cortlandt street, have received an order from the Rhode Island Suburban Railway Company of Providence, R. I., for an equipment of Green economizers to take care of their 7000 horse-power boiler plant. The Cambridge Electric Light Company of Cambridge, Mass., have also contracted with this company for economizers for the new plant which they are building.

Orders are being placed by Frazer & Co. of Japan and 65 Wall street, New York, for the equipment of an extension to the Seoul Electric Company of Corea. The contract for a number of rotary transformers and electric car equipment was given to the General Electric Company. The J. G. Brill Mfg. Company are to furnish the cars. The Seoul Company operate the first electric road ever built in that section of the world.

The Edison Electric Illuminating Company have placed an order with the Buffalo Forge Company of 39 Cortlandt street for forced draft apparatus to be applied to the boilers in the Gold street station. The Buffalo Forge Company were awarded the contract for the heating apparatus to be installed in the great new car barns of the Toledo & Monroe Railway, at Monroe, Mich.

A large order for trolley hangers, overhead trolley tracks and conveying machinery has been received by the New Jersey Foundry & Machine Company of 26 Cortlandt street. The apparatus is to be shipped to Western Australia. It is to be used in the automatic handling of general merchandise in the dock warehouses at Perth.

Orders are being placed by the Chappara Sugar Company of 109 Wall street, New York, for a large amount of machinery, which is to be shipped to Cuba for the equipment of the largest sugar plant ever built in Cuba. The company, of whom ex-Congressman Hawley of Texas is president, and in which B. H. Howell, Son & Co. and Theodore Havemeyer are largely interested, own about 66,000 acres of land in the eastern portion of Cuba. A large portion of this is now under cultivation.

It is expected that next December, when the new mill will be ready for grinding, 350,000 tons of cane will be ready to be handled. A railroad 30 miles long will be constructed. The new mills will have a capacity of 3000 tons of cane per day. A power plant of 6000 horse-power will be required. The contract for the boilers has been awarded to the Babcock & Wilcox Company. The contract for the pumps, which, it is said, will aggregate in value about \$19,000, has been given to the Henry R. Worthington arm of the International Steam Pump Company. There are to be 11 large piston pattern pumps and three rotary dry vacuum pumps in this order.

An order for three large centrifugal pumps was awarded to the Morris Machine Works. The contract for the mills, crushers and filter presses was awarded to the Whitney Iron Works of New Orleans. G. W. Deming of New Orleans will supply the clarifying apparatus. The multiple effects are to be purchased from the Sugar Apparatus Company of Philadelphia, and James Oat & Sons of the same city will furnish the vacuum pans. Other contracts include orders for factory stacks and steel tanks from the Riter-Conley Mfg. Company; mill shafts from the Bethlehem Steel Company, and blowers from the B. F. Sturtevant Company. Augustus Smith of New York City will erect the buildings: the Chattanooga Car Company and Fox Brothers & Co. will furnish the cars, and the Illinois Steel Company will supply the steel rails.

Cincinnati is again in the market for three monster pumping engines. Considerable interest is being taken in this plant by the trade, as it will be the largest pumping station in the world when completed. It will be recalled that three 20,000,000-gallon pumps have recently been purchased from the Camden Iron Works. The present specifications call for three 25,000,000-gallon

pumping engines. They are to be of the triple expansion crank and fly wheel type. A boiler plant is also to be purchased. It is to be of a sufficient capacity to operate the six new pumping engines. A 30-ton electric traveling crane is also included in the present specifications. Copies of the specifications, plans, proposal blanks, &c., can be obtained from the chief engineer of the Board of Trustees, "Commissioners of Water Works." The bids will be opened on June 18.

On April 10 the bids will be opened for the 30,000,000-gallon pumping engine which is to be purchased by the Indianapolis Water Company of Indianapolis, Ind.

Bids will be opened on April 8 by the Board of Water Commissioners of Yonkers, N. Y., for a boiler which is to be erected at the low service station of the water works. Bids will also be opened on the same date for about 1100 lengths of 8, 6 and 4 inch cast iron piping.

T. A. Gillespie & Co. of 26 Cortlandt street, New York, have been awarded the contract for the buildings, chambers, &c., to be built in connection with the new filtration plant of the East Jersey Water Company at Little Falls, N. J. The contract for the mechanical filters to be used was awarded to the Continental Filter Company of 35 Wall street, New York.

At the New York office of the Epping-Carpenter Pump Works a contract has just been closed for a long pressure pump which is to operate accumulators at the new factory of the Locomobile Company of America, now in course of construction at Bridgeport, Conn.

Contracts are being let by the Yorkville Independent Hygeia Ice Company for the building of a large ice plant in East Eighty-second street, New York City. The company have already closed with the Frick Company of Waynesboro, Pa., for the refrigerating engines and ice making machines. There will be two of the latter having a daily capacity of 250 tons. The engines are to be of the Corliss type. The boiler contract, which calls for 1200 horse-power divided into three units, has been secured by the Stirling Company. It is said that the total value of these contracts is about \$150,000. Among other contracts already awarded is an 8 x 10 Erie Ball engine, which is to be furnished by the Frank M. Pierce Engineering Company of New York City. The Milwaukee Electric Company received the order for the switchboard, generator and other electrical accessories. The plant is to be lighted electrically.

The Webster Mfg. Company of 38 Dey street have just been awarded a contract for the mechanical apparatus required in a large extension to be built to the grain elevator of the Boston & Maine Railroad at Boston. There will be a 2500-foot belt conveyer and considerable additional conveying machinery for the handling of grain.

Rossiter MacGovern & Co., Incorporated, of 141 Broadway, New York, have just issued another price-list of the refitted machinery which they have at their factory and repair shops in Brooklyn. The list comprises several hundred engines, boilers, condensers, generators, motors, street cars, trucks, &c., which have been overhauled at the Brooklyn shops and placed in good working order.

We are advised that the Babcock & Wilcox Company have removed their Philadelphia offices from the Drexel Building to the North American Building, Broad and Sansom streets.

Catalogues Wanted.—Harry Wheeler of the Norton Iron Works, Ashland, Ky., desires to receive catalogues of power transmission and general mill machinery.

Information Wanted.—A correspondent wants the address of sheet metal stampers who can handle a sheet of No. 20 steel 25 x 31 inches.

The new wage scale of the Bridge and Structural Iron Workers' Association, which goes into effect May 1, is being presented this week to the structural iron and steel companies in the Pittsburgh district. The scale provides for a day of nine hours at 40 cents an hour.

The Philadelphia Machinery Market.

Office of *The Iron Age*, Forrest Building,
PHILADELPHIA, PA., March 25, 1901.

Continued activity may be noted in all branches of the Philadelphia machinery market. Nearly all the manufacturers have their order books well filled, and in many instances new work is being taken only on extended time deliveries. A busy spring and summer seem assured, however, in all lines of the trade. Inquiries have maintained a good volume and are of better tone than earlier in the month, when they were plenty enough, but the resultant business was not as satisfactory as at present. Foreign demand, which has practically been at a standstill, appears to be slightly improved. Several manufacturers have recently booked orders for export, and, although the trade is confined at this time to certain special lines, inquiries generally have increased in volume. The various foundries are all busy, and, although deliveries on castings are fair at present, a continuance of the large general business now being offered will soon make deliveries more or less uncertain.

The demand for heavy machine tools, compression machinery, &c., is still very active. Deliveries on some lines are said to have improved, although new work for early delivery is at a premium.

Among the manufacturers of the smaller machine tools trade has noticeably increased. Inquiries have been voluminous and considerable business has been done. Deliveries generally are fairly prompt, and the trade on the whole is in much better condition than it was last month.

Activity among the shipyards and locomotive builders continues. New orders are being constantly taken and the various plants are being operated to their utmost capacity. Inquiries and sales among the manufacturers and dealers in the smaller engines and boilers and general supplies have been large, and the trade may be said to be in a very satisfactory condition.

Prices generally are unchanged, but firmer; no actual advances are noticeable except for quick deliveries.

The Lodge & Shipley Machine Tool Company (Philadelphia branch) continue very busy, and a large number of machine tools have been delivered to various local parties. Trade in Reeves' variable speed pulleys is large and the general outlook is considered excellent.

The Hess Machine Company, manufacturers of file making machinery, &c., are very busy in all departments. Inquiries have been numerous, especially for foreign delivery. A number of satisfactory orders have recently been taken, among which were five file machines for export to England, two to France and a number for Russian delivery. Recent deliveries include seven machines exported to France; three have been shipped to the Madden File Company, Middletown, N. Y., and four to the American Swiss File & Tool Company, Elizabeth, N. J.

Thomas H. Dallett & Co., manufacturers of portable and stationary power tools, pneumatic tools, &c., have had an active month. Inquiries have materially increased and some nice orders have been taken. Trade in electric portable drills and pneumatic tools has been the most active, and a number of drills have been delivered to local and distant points. A number of pneumatic tools for heavy stone work have also been delivered to local parties.

The Philadelphia Roll & Machine Company continue very busy. Orders for rolls and rolling mill machinery are numerous. The machine shop is being run on a double turn and the foundry department is taxed to its utmost capacity. Inquiries are of good volume, and the prospects for continued activity are considered favorable. Recent shipments of rolls, &c., may be noted for the Pennsylvania Steel Company, Steelton, Pa., and for the Maryland Steel Company, Sparrows Point, Md. Some heavy machinery parts have also been delivered to the Southwark Foundry & Machine Company, Philadelphia, Pa.

The Philadelphia Machine Tool Company have had a very active trade. Inquiries have been in large vol-

ume and a number of satisfactory orders have been taken. All departments of the plant are running on full time, and the prospects of a busy spring and summer are very favorable. Among recent orders may be mentioned one for two 50,000 pounds capacity testing machines for delivery in the middle West, and another for a large steel frame riveter for range and stack work for local delivery. A large number of punch presses, &c., have been shipped for delivery in Cleveland and at other Western points.

Dienelt & Eisenhardt are running their plant to its full capacity. Machinery for export is still in course of construction, and trade in jacks and dead stroke hammers continues active. The foundry department is exceptionally busy on general work.

The Philadelphia Pneumatic Tool Company, manufacturers of pneumatic riveters, hammers, rammers, &c., report that they are nearly a month behind on their orders; all their tools appear to be in general demand. Inquiries are of good volume and the resulting business very satisfactory. A number of various tools have recently been shipped to the Pencoyd Iron Works, Pencoyd, Pa.; the Maryland Steel Company, Sparrows Point, Md., and to other large steel companies. The foreign demand has increased, and a large number of tools have been supplied to Germany, England and other countries.

The Harrison Safety Boiler Works continue busy in all departments. Inquiries from both home and foreign markets—especially from England—have increased in volume and a number of satisfactory orders have been booked. Shipments of several heaters and separators have recently been made to Stockholm, Sweden, and a large number of heaters have been shipped for delivery in the middle West.

Alfred Box & Co. are exceptionally busy on cranes, hoist and general work. Inquiries are unusually numerous and a satisfactory number of orders are being booked. Among recent orders was one for three electric cranes for the United States Government for use in the Portsmouth, N. H., Navy Yard. Of these three cranes one is of 20-ton capacity, with 40-foot span; the other two are of 5-ton capacity each and have a span of 35 feet.

The Link-Belt Engineering Company are fairly busy on a large line of small work. All departments are running full time and a considerable amount of new business is in sight. Inquiries are of good volume and the prospects of a busy spring and summer are considered very favorable.

The Energy Elevator Company have had an active month; inquiries have been numerous and orders have been booked from all parts of the United States. At present they are having a heavy run of trade on invalid and basement lifts. Among recent shipments there may be noted a large freight lift for El Paso, Texas, delivery, and a stable lift for Stockbridge, Mich. Local trade has been extensive and a number of elevators are being installed, one large one being for Schmidt Bros., Nicetown, Philadelphia.

The Tabor Mfg. Company, who have recently removed their plant from Elizabeth, N. J., have been busy in all departments and are running three nights per week in order to keep up with deliveries. The capital stock of the company has recently been increased, and the facilities for rapid and increased capacity largely augmented, and a number of additional machine tools still remain to be installed. A number of special Vibrator molding machines of various types have recently been delivered to the New York Air Brake Company and also to the General Electric Company, Schenectady, N. Y., as well as to various other concerns.

After a slight period of the usual winter dullness the J. W. Paxson Company, foundry supplies, &c., have become very busy. The spring sand trade has opened up and is now very active. A number of new cupola plants are being installed, among which may be mentioned a No. 20, 7 tons per hour capacity, for the Pennsylvania Steel Company, Steelton, Pa.; a No. 10, 10 tons per hour capacity, for the Fuller & Warren Company, Troy, N. Y.; a No. 12, for the Oswego Boiler Works, Oswego,

N. Y., and a 2-inch diameter cupola, 4 tons per hour capacity, for the Champion Blower & Forge Company, Lancaster, Pa. A small portable cupola is also being furnished to the Camden & Suburban Railway, Camden, N. J. This cupola is to be fitted on a truck and will be used for pouring street rail joints, &c. A Paxson-Brown oil furnace is being built for the Union Traction Company, Philadelphia, Pa. This furnace will be used for melting spelter, &c., and will be of 250 pounds capacity, and will be fitted with all the necessary appurtenances into a wagon and transported to various points desired.

The Baldwin Locomotive Works, who are now employing over 9000 workmen, continue very busy in all their numerous departments. Inquiries are of good volume and a number of satisfactory orders have been taken since last month's report. The trade, however, has been entirely domestic, with no immediate indications for a resumption of foreign orders. Among recent shipments may be noted three standard gauge Mogul engines for the Eastern Algerian Railway; two 10-wheel freight engines for the Richmond, Fredericksburg & Potomac Railroad, and four 10-wheel freight engines for the Atlantic Coast Line. The last two of the ten locomotives ordered by the Toledo, St. Louis & Western Railroad have also been shipped.

The Neafie & Levy Ship & Engine Building Company successfully launched the steamboat "City of Trenton" a few days ago. This steamboat was one of two of the same size, which are being built for the Wilmington Steamboat Company, and will ply on the Delaware River, between Philadelphia and Trenton, N. J. Her dimensions are: Length, 162 feet; molded beam, 32 feet, and depth of hold, 8 feet; when loaded to maximum capacity the draft will be 5 feet. She is provided with twin screws and will be equipped with triple expansion engines, 10, 15 and 25 inch diameter of cylinders and 18-inch stroke. The boilers will be of the locomotive type and capable of carrying 175 pounds steam pressure. The keel for the sister boat, which will probably be called "The Quaker City," has already been laid, and the work is progressing favorably. The Neafie & Levy Company are running their yard to its utmost capacity. Work on the various Government vessels is being rushed and a large amount of repair work is also on hand.

The Standard Crucible Steel Company.—(By Telegraph.)—PITTSBURGH, PA., March 27, 1901.—The Standard Crucible Steel Company have been organized here, and will apply for a charter at an early date. This concern have ample backing, and will build a large plant in the Pittsburgh district for the manufacture of high grade crucible and open hearth steels. The capacity of the plant will be large, and it will be up to date in every respect.

The Sharon Steel Company.—(By Telegraph.)—PITTSBURGH, PA., March 27, 1901.—The Sharon Steel Company of Sharon, Pa., will double the capacity of the new tube mill at Sharon, the additional cost being nearly \$1,500,000. The new plant will have a daily capacity of 400 tons of basic steel tubing instead of 250 tons, as at first proposed. Tubing will be made in one mill up to 6 inches in diameter, and in another up to 14 inches. The skelp mill will have a daily capacity of between 500 and 600 tons, or 200 tons more than at first proposed. The Sharon Steel Company will also make boiler tubes on a large scale.

The Cuyahoga Iron & Steel Company.—B. A. Kaiser, formerly chief engineer at the Edgar Thomson Steel Works of the Carnegie Steel Company, at Bessemer, Pa., and later doing expert work of a technical nature for the Carnegie Steel Company, has severed his connection with that concern to become president of the Cuyahoga Iron & Steel Company. This concern were recently organized, and will erect a large rod mill at Cuyahoga Falls, Ohio. The concern are an identified interest of the E. A. Henry Wire Company, now operating wire mills at Cuyahoga Falls. This concern will use the output of the rod mill.

HARDWARE.

THERE is no reason for solicitude in regard to the volume of our exports of Iron, Hardware and related products during the present year, as compared with 1900. All the indications point to the groundlessness of any apprehensions that the trade in these lines is leaving this country to go to our competitors abroad. It is probable that the volume is larger than last year, with many evidences of the continued expansion of our export trade. While in some departments there is, owing to special causes, something of a falling off, the gains in other directions will apparently more than make it good.

This is the more significant as there are influences at present operative in various foreign markets which tend to keep shipments below the volume which they would otherwise attain. The condition of things which prevails in China and the Far East generally results in greatly diminishing sales in these important markets. The continuance of war and the unsettled state of things in South Africa still interfere with the regular movement of trade. Exports to Russia are experiencing the troubles which are connected with the imposition of increased duties, and many lines of products, among which Agricultural Implements have a prominent place, are feeling the effect in curtailed shipments. Cuban trade has not yet resumed its natural course on account of the unsettled political condition, and our exporters are thus deprived of the full benefit of a market that naturally belongs to them. The fact that the Hawaiian Islands since they became part of the United States are not included in the statistics of exports diminishes the aggregate of the figures which represent our foreign business.

Even under these adverse influences the great extent of our foreign trade and its steady development, notwithstanding even temporary fluctuations in its volume, especially when it is considered in connection with the condition of foreign markets, rendering competition in some respects more difficult, is a striking evidence of the vitality and permanence of our export trade and the security of our position as regards the markets of the world.

In marked contrast to this eminently satisfactory condition of things is the falling off in British exports. This matter was touched upon in the letter of our London correspondent, which was published in our last issue, referring to the heavy shrinkage of English foreign trade in February, notwithstanding the stimulus given in certain directions by the large purchases and orders for the army, which are doing something to keep the factories busy. The opening for American goods not only in the British colonies but in Great Britain itself is one of the significant features of the present situation, of which manufacturers in this country will not be slow to take advantage.

To the intelligent merchant each month has its special characteristics which give it something of an individuality and distinguish it from other months. Those who are alert and enterprising recognize this and are prompt to avail themselves of the opportunities which are presented for the advancement of the interests of their business as proper use is made of each of the passing months. To do this requires thoughtful attention to business problems and a certain degree of foresight. Plans, therefore, should be made in advance of the time

when they are to be put into execution. The special work for each week should be thought out and arranged for. When this is done it is usually a comparatively simple thing to carry out the work which is laid out.

With a view to giving practical suggestions as to the way in which the Hardware business may be profitably and successfully conducted at this season, we give in the following columns a series of articles on the work and opportunities especially belonging to April. They are not intended to discuss the subject exhaustively, but simply to indicate some of the features of the month, the lines of trade to be cultivated, methods to be adopted, &c., in such a way as to be suggestive to those who are ready to avail themselves of the experience of others. We trust the hints thus given may be serviceable to the trade.

Condition of Trade.

The situation in the Hardware market remains substantially as at our last report. The demand on the whole is excellent and in some lines so large as to tax the facilities of the manufacturers. Heavy goods are especially strong in price and some of them are becoming rather scarce owing partly to the difficulty which manufacturers experience in getting material. The demand, too, is heavy on the jobbers, whose stocks of similar goods and also of some other kinds of Hardware are getting low. The tone of the market continues steady and strong. A large volume of general business is doing. Export trade still increases in volume and also in the variety of goods going out. The financial condition gives little ground for complaint. Questions relating to the interests of the different classes of trade continue to attract much attention, and the changing methods under existing conditions are constantly bringing up new problems. In the meantime manufacturers, jobbers and retail merchants have little reason for complaint, as especially favorable opportunities are presented for the successful conduct of business.

Chicago.

(By Telegraph.)

If the demand for Hardware keeps up for a reasonable time to its present large volume the record will be broken for this territory for spring trade. The movement of goods is extraordinarily large. All sections are purchasing freely. Even the part of the Northwest which suffered from short crops last fall is buying like more prosperous districts. A very promising indication of good business conditions is the increase in the number of mail orders. These are greatly exceeding anything experienced since last fall. Some of the orders coming in by mail are quite large, showing that the buyers are not only in urgent needs of goods, but of quantities of them. The few mild days of last week caused a sudden demand to spring up for spring and summer goods. Refrigerators, for instance, have been called for in surprisingly large quantities, some factories having for a few days past made the largest shipments in their history. An advancing tendency is noted in many lines. Wire Cloth has been up to \$1.10. Jobbers state that they are having much difficulty in getting shipments on orders for Wire Cloth, Poultry Netting and of other classes of goods which were placed long ago. Screws are extremely scarce, notwithstanding the low prices recently prevailing, which were presumed to indicate that the factories were in need of orders. Tin Plate is not more plentiful than it was, and much difficulty is experienced in endeavoring to keep dealers supplied. Heavy Hardware jobbers report a better demand for Iron and Steel than during the boom. The demand is not only larger in the aggregate, but it consists of a constant stream of small orders, showing that buyers are not speculating,

but purchasing to supply their pressing wants. The demand is also very heavy for Wagon Material, Tires, Axles, Springs, Cloth, Leather, &c. Manufacturing consumers all seem to be short of stocks of materials.

St. Louis.

(By Telegraph.)

Hardware jobbers are overwhelmed with orders. To keep up with the heavy demand night work is necessary, and even then some delay is experienced in making shipments. The variety of goods ordered is extensive, the greater need, of course, being for strictly seasonable lines. Business shows weekly improvement, and is agreeably surprising to jobbers. The past week was notable for the sale of opening stocks, and quite a number of inquiries are still out from prospective buyers who contemplate embarking in the Hardware business. Among seasonable goods now bought it is mentioned that orders for Fly Screen Cloth received this week were the heaviest of the season. There is a feeling in the trade that Screen Cloth will be in short supply, which may account for the active movement now on. The demand for Wire Nails and Wire is increasing to a remarkable extent. Heavy Hardware jobbers say that the demand for Iron, Steel and Wood products is growing, and that the main difficulty now is to secure prompt deliveries. Few makers are willing to enter into extended contracts. Vehicle manufacturers report trade this season as opening up earlier than usual, and at the present ratio sales by April 1 will be double those of the corresponding quarter last year. Collections are even better than heretofore and bills are being discounted more freely.

Notes on Prices.

Wire Nails.—The demand for Wire Nails continues in large volume. Rumors of an advance to take effect on April 1 are without confirmation, but would not surprise the trade. Quotations continue as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

New York.—Local conditions in the Wire Nail market continue unchanged. Demand is fair, and a slight increase in the size of orders is noticed as spring advances. Quotations are as follows:

To retailers, carloads on dock.....	\$2.53
Small lots at store.....	\$2.55 to 2.60

Chicago, by Telegraph.—Manufacturers are unable to ship Wire Nails fast enough to satisfy the trade. The demand is of a healthy character, with apparently no speculative buying. Jobbers are ordering direct shipments to their customers and are putting very few Nails in stock. This indicates that stocks are light and likely to continue so. Jobbers report an unusually heavy demand, with their trade hampered by difficulty in securing satisfactory shipments from the mills. Carload lots are held at \$2.45 and small lots at \$2.55, with an occasional concession to \$2.50 to the best traders.

St. Louis, by Telegraph.—The heavy buying in Wire Nails is now being taken in a matter of fact manner, and mills are rushed with business. If shipments of Wire products continue to April at the present rate, March is expected to be the banner month. The price to retailers in carload lots is \$2.50, smaller lots being quoted at \$2.55.

Pittsburgh.—A report was current here yesterday in the daily press that the American Steel & Wire Company had advanced the price of Wire Nails 10 cents a keg, effective April 1. Upon inquiry we learn that the report is untrue. An advance at an early date would not be a surprise to the trade, but as yet there has been no official announcement made of it. There is a seasonable demand for Wire Nails, but not nearly so heavy as for Wire. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....	\$2.30
To jobbers in less than carload lots.....	2.35
To retailers in carload lots.....	2.40
To retailers in less than carload lots.....	2.50

Cut Nails.—At the regular monthly meeting of the Cut Nail manufacturers present prices of Cut Nails were reaffirmed for the month of April. The demand continues fair. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination; terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....	\$2.00
To jobbers in less than carload lots.....	2.05
To retailers in less than carload lots.....	2.20

New York.—A fair proportion of Cut Nails is in demand in the local market. Quotations for carload and less than carload lots are now based on a delivered price, f.o.b. Pittsburgh, plus the actual freight, and are as follows:

To jobbers in carload lots on dock.....	\$2.13
To jobbers in less than carload lots on dock.....	2.18
To retailers in less than carload lots on dock.....	2.36
Small lots from store.....	2.25

There is some irregularity in the price to retailers in less than carload lots on dock.

Chicago, by Telegraph.—The volume of business in Cut Nails is good, running considerably in excess of the same time last year. Jobbers continue to quote small lots from stock at \$2.35.

St. Louis, by Telegraph.—Makers of Cut Nails are getting their share of the heavy business in the Nail market. Quotations made vary from \$2.35 to \$2.45, base.

Pittsburgh.—As stated last week, Cut Nail makers now quote f.o.b. Pittsburgh, plus actual freight rates. There is a fair demand for Cut Nails, which is expected to improve when the active building season opens. The tone of the market is firm. To jobbers, prices are on carload lots \$2, and on less quantities \$2.05, f.o.b. Pittsburgh, plus the actual freight rates. To small dealers and consumers \$2.20 rates, f.o.b. Pittsburgh, plus the actual current rate; terms 60 days, less 2 per cent. for cash in 10 days.

Barb Wire.—An unusually large demand for Barb Wire is being experienced by manufacturers, who have difficulty in making prompt shipments. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots, Painted.....	\$2.60
To jobbers in carload lots, Galvanized.....	2.90
To jobbers in less than carload lots, Painted.....	2.65
To jobbers in less than carload lots, Galvanized....	2.95
To retailers in carload lots, Painted.....	2.70
To retailers in carload lots, Galvanized.....	3.00
To retailers in less than carload lots, Painted.....	2.80
To retailers in less than carload lots, Galvanized....	3.10

Chicago, by Telegraph.—Manufacturers report a phenomenal demand for Barb Wire from all sections. The Pacific Slope is taking enormous quantities, the Northwest is buying unusually heavily, but the South is surpassing either section in its clamor for larger and more rapid shipments. The local jobbers are having an extremely good business, larger than either during the spring or fall of last year. Carload lots are held at \$2.75 for Painted and \$3.05 for Galvanized. Less than carloads are quoted at \$2.85 and \$3.15 respectively, with shading of 5 cents to best buyers.

St. Louis, by Telegraph.—Mills are having their hands full in satisfying trade wants in Barb Wire. Shipments are being rushed forward as fast as possible, but the demand for Barb Wire is still pressing capacity closely. Painted, in carload lots to retailers, is quoted at \$2.80; smaller quantities, \$2.85. Galvanized is 30 cents higher.

Pittsburgh.—There is a phenomenal demand for Barb Wire for this season of the year, and the mills are pushed to their utmost to fill orders. In fact, buyers are having some little trouble in getting prompt delivery. The tone of the market is very firm, but as yet there has been no announcement made of an advance in prices, contrary to reports. For domestic trade we quote: Galvanized Barb Wire, \$2.90, in carload lots to jobbers, and

Painted \$2.60. Terms; 60 days net, 2 per cent. discount for cash in 10 days, f.o.b. Pittsburgh.

Plain Wire.—There is no diminution in the demand for Plain Wire, which is heavy. The market is firm at the following quotations, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

	Base sizes.	
	Plain.	Galv.
To jobbers in carload lots.....	\$2.25	\$2.65
To jobbers in less than carload lots.....	2.30	2.70
To retailers in carload lots.....	2.35	2.75
To retailers in less than carload lots.....	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances.

Chicago, by Telegraph.—A heavy trade in Plain Wire is being enjoyed by manufacturers and jobbers. All manufacturing consumers are using larger quantities than before. A great deal of Wire is going into Woven Wire Fencing particularly, for which the demand is remarkably great. No concessions of any kind are being made on the finer Wires, the demand being so heavy that full prices are being maintained for the entire list. Carload lots are still held at \$2.40, base, and small lots from stock at \$2.50, with an occasional shade to \$2.45.

Pittsburgh.—We note a very heavy demand for Plain Wire for this season of the year, and Wire mills are handicapped to some extent by inability to get Steel as promptly as needed. The Wire trade at this season of the year is away ahead of anything ever before known. We quote:

	Plain.
To jobbers in carload lots.....	\$2.25
To jobbers in less than carload lots.....	2.30
To retailers in carload lots.....	2.35
To retailers in less than carload lots.....	2.45
Galvanized Wire up to No. 14 is 40 cents advance on Plain; Nos. 15 and 16, 75 cents advance, and Nos. 17 and 18, \$1 advance. Terms are 60 days net, with 2 per cent. off for cash in 10 days, f.o.b. Pittsburgh.	

Stove and Tire Bolts.—An advance in the price of Stove and Tire Bolts was made by the associated manufacturers on the 26th inst., the base discount being made 75 per cent. instead of 77½ per cent., as heretofore.

Sheet Copper.—In view of the condition of the Copper market an advance of ½ cent per pound was made March 21 in the prices of Sheet Copper, the base price thus becoming 21 cents. The following prices for Copper Bottoms, Pits and Flats are also announced:

	Cents.
14 ounces to square foot, and heavier, per pound.....	25
12 ounces and up to 14 ounces to square foot, per lb.....	26
10 ounces and up to 12 ounces.....	28
Lighter than 10 ounces.....	31
Circles less than 8 inches in diameter, 2 cents per pound additional.	

Circles over 13 inches in diameter are not classed as Copper Bottoms.

Polished Copper Bottoms and Flats, 1 cent per pound extra.

Tin, Galvanized and Japanned Ware.—Some of the leading manufacturers of Tin, Galvanized and Japanned Ware have effected an arrangement by means of which uniform prices are being quoted by them. Some advances have been made in these lines, more particularly in Galvanized Goods, which in part have been necessitated by the advances in raw materials since the opening of the New Year, the increases varying from 5 to 15 per cent.

McKinney Mfg. Company.—McKinney Mfg. Company, Allegheny, Pa., under date March 15 announce the adoption of the revised list prices on Strap and T Hinges which were published in our last issue, and in connection therewith the following base discounts:

Light Strap.....	75 %
Heavy Strap.....	80 %
Light T.....	70 %
Heavy T.....	66 2-3 %
Extra Heavy T.....	75 & 10 %

Long Chest.....	60 %
Hinge Hasps.....	60 %
Crate Hinges.....	75 %
Crate Hasps.....	60 %

The market in this line is regarded as in a very satisfactory condition, prices being firmly and regularly maintained.

Cast Iron Soil Pipe and Fittings.—Under date March 20 the manufacturers of Cast Iron Soil Pipe and Fittings withdrew all quotations on this class of goods, and on March 21 revised prices, taking effect March 20, were issued for immediate acceptance and prompt shipment. The new prices show that no change has been made in prices applying to New York State (outside of Greater New York and Long Island) and the New England States. The changes made apply to Greater New York, New Jersey, Long Island, Maryland, Delaware, Pennsylvania, Virginia and West Virginia (east of the Alleghany Mountains), and have the effect of placing these last mentioned territories on the same selling base as has been the case in New York State and the New England States since January 10 last, at which time the last change in discounts was announced. There is now no discrimination or distinction whatever in prices in any part of the United States. All Soil Pipe and Fittings are now sold to the jobbing trade at the list prices adopted February 25, 1901, subject to the discounts given below. Freight is allowed on carload lots, less than carload lots being strictly f.o.b. foundry. On car lot shipments to points on Long Island (other than the Borough of Brooklyn) Brooklyn freight only will be allowed. The following are the revised prices, terms 60 days, or 2 per cent. discount for cash in 10 days:

2 to 6 inch Standard Pipe.....	65 and 5 %
2 to 6 inch Extra Heavy Pipe.....	70 and 10 %
2 to 6 inch Standard and Extra Heavy Fittings.....	75 and 10 and 5 %
7 and 8 inch Standard and Extra Heavy Pipe and Fittings.....	65 %
10, 12 and 15 inch Standard and Extra Heavy Pipe and Fittings.....	65 %
4-inch Medium Pipe, S. H., net per foot.....	14c.
4-inch Medium Pipe, D. H., net per foot.....	15c.
2, 3, 5 and 6 inch Medium Pipe, from Standard lists.....	75 %
2 to 6 inch Medium Fittings, from Standard lists.....	75 and 10 %

Under date March 20, a prominent house announce the following discounts on Soil Pipe and Fittings to the retail trade, which are subject to change without notice:

2 to 6 inch Standard Pipe.....	60 %
2 to 6 inch Extra Heavy Pipe.....	65 and 10 %
2 to 6 inch Standard and Extra Heavy Fittings.....	75 %
7 to 15 inch Standard and Extra Heavy Pipe and Fittings.....	55 %

It is understood that many of the New York jobbers have adopted the above schedule of prices as the lowest they will quote on small "pick up" orders from their customers. This is owing to the fact that all the manufacturers do not now make delivery to any job or store in New York.

Drawn Lead Traps and Bends.—On March 21 the makers of Drawn Lead Traps and Bends held a meeting in New York City, at which an advance of 5 per cent. in the price of these goods to the jobbing trade was decided on. The new discount on Traps and Bends, applying to the list adopted August 2, 1897, is 60 per cent. Terms 30 days, or 2 per cent. for cash in 10 days from date of invoice, with usual delivery at jobbing points.

Plumbers' Brass Work.—It is understood that new prices on Plumbers' Brass Work will be announced on April 1. A great many of the manufacturers have withdrawn prices during the last few days, and quotations are firmer. An excellent demand is reported.

Binder Twine.—There has been an advance by some Eastern manufacturers of Binder Twine of ¼ cent per pound. Increased cost of Manila Hemp, with which

Sisal Hemp sympathizes, is proportionate to the advance in Twine. Some manufacturers are not quoting Manila or Pure Manila Twine. General quotations are as follows for small lots of Twine, with a rebate of $\frac{1}{4}$ cent per pound for carload lots, f.o.b. Eastern factory:

White Sisal, 500 feet per pound..... $8\frac{1}{4}$ c.
Standard, 500 feet per pound..... $8\frac{1}{4}$ c.
Manila, 600 feet per pound.....10 to $10\frac{1}{4}$ c.
Pure Manila, 650 feet per pound..... $11\frac{1}{4}$ to $11\frac{1}{2}$ c.

A quotation of 8 cents per pound for Sisal and Standard Twine is reported.

Radiation.—Announcement is made by the American Radiator Company, Chicago, under date March 21, to the effect that hereafter orders for Standard Plant, Steel Plant and Ellwood Plant Radiation will be accepted only for immediate shipment, specifications accompanying each order.

Glass.—A meeting of the representatives of the jobbers' association and manufacturers' combine is scheduled for the last of this week, at which trade conditions will be discussed. It is reported that jobbers' prices will be advanced at this time about 5 per cent. There are differences of opinion regarding the probable condition of the Glass market during the late summer, as the result of an early shut down of the Glass factories. The view of some is that factories will have enough stock to carry them well into October. Others are of the opinion that the market will be bare of Glass during September, and that prices are likely to advance during August and September. The Jobbers' Association discounts for single and double strength Glass, for all grades, for the entire country are as follows:

	Discount.
Less than carloads.....	85 and 5 %
Carloads	$87\frac{1}{2}$ %

Paints and Colors.—**Leads.**—While orders for White Lead in Oil have not shown any large increase, the opinion prevails that with the advent of pleasant weather there will be an improvement in this direction. No change in prices has taken place, and quotations are as follows: In lots of 500 pounds and over, $6\frac{1}{2}$ cents per pound; in lots of less than 500 pounds, 7 cents per pound.

Oils.—**Linseed Oil.**—The Linseed Oil market continues unsettled, with a tendency toward lower prices. Weather conditions have recently been unfavorable for outside work and have affected demand unfavorably. Oil cloth and varnish manufacturers are practically out of the market as purchasers, and demand is limited to small lots. Quotations are as follows, according to quantity: City Raw, 61 to 62 cents per gallon; State and Western brands, 58 to 59 cents per gallon. Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.—The Turpentine market is quiet, demand being confined to jobbing lots. Early in the week large consumers purchased quite liberally, but have since been out of the market. Quotations at this point are as follows, according to quantity: Southern, 37 to $37\frac{1}{2}$ cents per gallon; machine made barrels, $37\frac{1}{2}$ to 38 cents per gallon.

New Enameled Ware Factory.

THE McLAUGHLIN, MARTIN, PARKHURST COMPANY, Canandaigua, N. Y., are erecting a large plant, 500 x 450 feet, for the manufacture of high grade Enameled Ware. They have secured the services of one of the best enamelers of the country and purpose to supply a line of Enameled Ware differing in many respects from any at present on the market. The company expect to have their new plant in operation not later than June 1.

A. H. Burkert, Gosport, Ind., contemplates erecting a large new building, 40 x 80 feet, two stories, for his business. Mr. Burkert has lately added lumber, brick and all kinds of building material to his former stock of Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, Buggies, Wagons, Harness, Metal Roofing, &c.

Hardware Club of New York.

THE annual meeting of the Hardware Club of New York was held at the club rooms Saturday, March 16, the president, George H. Sargent, in the chair. Reports indicated a very satisfactory condition of things, the club evidently enjoying a high degree of prosperity. The resident membership has reached the constitutional limit of 600, and several applicants are on the waiting list. The financial condition of the organization is also eminently sound, as shown in the figures submitted by Thomas F. Keating, the treasurer, notwithstanding some unusual expenditures during the past year. The following gentlemen were elected governors for the term of three years: Alfred D. Clinch, Geo. J. Loughton, James D. Foot, Webster R. Walkley and Mortimer C. Ogden. A number of minor amendments to the constitution and by-laws were also adopted.

A meeting of the new board was held on Thursday evening, 21st inst., the special business being the election of officers. The result was the choice of the following:

PRESIDENT, Edward C. Van Glahn.

VICE-PRESIDENT, R. R. Williams.

SECRETARY, Arthur G. Sherman.

TREASURER, Thomas F. Keating.

George H. Sargent, who has been president during the past two years, whose administration has been so eminently successful, was put in nomination for another term, but declined a re-election. James H. Kennedy, who for several years has occupied the position of secretary and discharged his duties in a most acceptable and efficient manner, also declined a re-election. The valuable services of both of these gentlemen are highly appreciated by the board and the club at large. The new officers who take their places are also regarded as admirably qualified for the positions they occupy.

Edward C. Van Glahn, the newly elected president of the Hardware Club, has been identified with the organization since its inception, being a charter member and one of the trustees named in the articles of incorporation.



EDWARD C. VAN GLAHN.

President Hardware Club of New York.

Two years ago he was chosen vice-president, having always been on some of the important committees of the club as member or chairman, and has, from the beginning, been an active, earnest worker and sound adviser in matters relating to the advancement of the interests of the club. Mr. Van Glahn is now the senior partner of the old Hardware house of White, Van Glahn & Co., 15 Chatham square, New York, formerly W. N. Seymour & Co., now, as then, on the same site, the oldest records of business transactions they have bearing date of 1812.

A few years ago Mr. Van Glahn also established a fine retail Hardware store at 49 East Forty-second street, near the Grand Central Depot, where a large and finely assorted stock is carried, he dividing his time between the two stores. He is secretary of the Hardware Dealers' Association of New York City, recently organized, and has long been a member of the Union League Club.

Arthur G. Sherman, the new secretary of the Hardware Club, has been one of its members since the club



ARTHUR G. SHERMAN,
Secretary Hardware Club of New York.

was incorporated in June, 1892, being one of the original trustees or governors named in the articles of incorporation. Like the new president, he has always been an active and hard worker in the club's interest and connected with important committees. In the business world he represents a number of well-known Hardware manufacturers for export, with headquarters at 14 Warren street, New York.

Death of James W. Vinal.

JAMES W. VINAL, a well-known Hardware dealer of Boston, died on the 21st inst. from erysipelas. Mr. Vinal was born in Boston, February 25, 1842. His father was a Hardware dealer and the son early found employment in the same business, and became a clerk in the store of Burditt & Williams. Here he remained for several years, when he helped to establish a similar business in Dock square, the firm name being Bogman & Vinal. On the former's death, in 1888, Mr. Vinal entered into partnership with James Work, who had been a clerk for him for 15 years, under the name of James W. Vinal & Co. Mr. Work died about two years ago, since which Mr. Vinal has conducted the business alone. A meeting of the Hardware trade of Boston was held at the office of the New England Iron and Hardware Association on March 22 to take action on his death, which was largely attended by Mr. Vinal's old associates. The meeting was called to order by Charles A. Burditt, and James A. Farless acted as secretary. Resolutions were adopted testifying the warm appreciation by his fellow Hardwaremen of Mr. Vinal's sterling qualities as a citizen and a merchant.

THE statement in our last issue that the next meeting of the Pennsylvania Wholesale Hardware and Supply Association would be held in Scranton, was erroneous. The members of the newly formed association will come together at Reading, June 20 next.

James Trickey has purchased an interest in the firm of Robert Tratt & Son, Ipava, Ill., and the name of the firm is now Tratt & Trickey.

Requests for Catalogues, Quotations, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

W. I. EVERETT, Rockingham, N. C., has opened up a General Hardware, Mill Supply and Agricultural Implement store next door to his general merchandise establishment, and will do business under the style of Everett Hardware Company. Mr. Everett expects to do some jobbing in connection with his retail trade. He expresses a desire for catalogues, quotations, &c.

William B. Trout has just opened up at Ohio City, Ohio, as a dealer in Hardware, Stoves, Tinware, Paints, Varnishes, Brushes, Glass, Sash, Doors, Lime, Cement, &c., and would value catalogues, &c., relating to these lines.

The store of Wakeman & Booth, Arcadia, La., was destroyed by fire on the 6th inst. The loss was partially covered by insurance. The firm are now at work on a new building, with a frontage of 30 feet and a depth of 120 feet, 17-foot ceiling. They will carry an enlarged line, embracing Shelf Hardware, Tinware, Stoves, Wooden Ware, Harness, Saddlery, Leather Goods, Glassware, Crockery, and Buggies and Wagons, and would be glad to receive catalogues, &c., pertaining thereto.

B. C. Sterling & Co., Warren, Vt., who are dealers in Hardware, Farm Implements, Stoves, Crockery, furniture, carpets, groceries, dry goods, &c., advise us that they are enlarging their Hardware department with a view to carrying a complete line. They desire catalogues, &c.

Schippers Bros., import and export commission merchants, New York City, announce that on account of fire in their warehouse and office, they have temporarily removed to 261 Washington street, at which location they should be addressed until further notice. All their catalogues, discount sheets, &c., were destroyed, and they intimate their desire to replace them.

Armstrong, Walls & Co.

ARMSTRONG, WALLS & CO., manufacturers' agents and dealers in supplies for mills, factories, foundries and machine shops, have just opened up for business at 45 Centre street, New York. The concern are composed of Robert H. Armstrong, Thomas B. Walls, Charles J. Bray, Ivan Spangenberg and Herman H. Schnepel, all of whom, as announced in an attractive little circular to the trade, have been continuously in the supply business for from 15 to 20 years. Mr. Armstrong has just resigned the treasurership of Patterson, Gottfried & Hunter of New York City, with which house he has been connected for many years. Mr. Walls was for years a traveling salesman for the same house, establishing agencies for Wood Pulleys, Shaw Couplings, Supplies, &c., throughout the United States, and recently resigned his position to push the new enterprise. Mr. Bray was formerly a salesman for the supply house of Olney & Warrin of New York, and Mr. Spangenberg has been selling Machine Tools for the Garvin Machine Company for years. Mr. Schnepel has for a long time been connected with the Romer Lock Company of Newark, N. J. In their trade announcement the new firm lay particular stress upon their many years' practical experience in the supplies business, and upon the fact that each member of the concern will look personally after customers' interests, without depending upon employees. They request that manufacturers desiring representation in this market communicate with them.

M. Bergan & Bro. have bought out Smith Bros., Manhattan, Ill. They are making an important addition to the establishment.

The Hardware Store in April.

In the following columns we consider the work which belongs to April, the various articles embodying suggestions as to the use to which the month may advantageously be put. Advices from the trade are invited, supplementing the information given as to April work and indicating other opportunities and methods which belong to it.

WHAT TO DO IN APRIL.

BY H. C. W.

WHATEVER we do in April should be made to count for its very fullest value. It comes as near being the pivotal month of the year as any other one month. If it be advertising, window dressing, circularizing, letter writing, make it count, for on this month hinge your contracts for new buildings, many large factory contracts, your farm residences, and large farm barns, your sales of Paint for the season, bills of furnishings with supply men and large contractors; and the result is very greatly what we choose to make it. We begin to realize when the month is at hand what ought to have been done, what might have been done, in preparation in the previous months. April is truly

The Gate to the Year,

and, when opened, finds many of us not ready for it, and always wondering why not. With the previous months, notwithstanding lots of good work, we are yet behind in our advertising, in our store changes, our bin and drawer making, our resampling and marking of goods, our early buying and getting in of goods.

COLLECTIONS.—The arrangement of floor space is not done with, and, worse than all, our collections are not up; and, by the way, this is the oil that runs the business, and no man can properly carry on merchandising if hampered with outstanding collections.

A certain amount of systematic work for each month has become a necessity, and for April, as well as the other months, there should be, first,

Systematic Advertising.

Everything along the line should be given its greatest prominence now. If you have a case or two of unused road signs, and nearly every one has, its a good time to give a faithful man a week off, and get them well distributed. If you have a lot of good cuts laid away, and nearly all of us have, now is the time to get them out, clean up and assort, and get them ready for service—some for the city daily, others for the country weekly. See, too, that *all* of your advertising is changed, that what you are using is bright and new and straight to the point.

It's a good plan to lay out

Special Work for Each Week.

FARMERS' TOOLS, IMPLEMENTS, &C.—Say for the first week of the month it be made Farmers' Tools and everything that goes with them. As with everything else, have your advertising go along with the work in hand. If you carry Implements, it is well to know that the repair stock is complete. Very many of us begin to order Plow Points, Cutters, Coulters, &c., only after numerous calls begin to come in for them. They are sure sale and are profitable, and should be considered as much a part of regular stock as any other lines of goods. There is always some one man in a house more familiar than the balance with this class of trade, both as to the goods and the people, and to him should it be given in charge, allowing him the time for the arrangement of goods, for the preparation of lists of good farmers, to whom personal letters are sent, carrying his work through all its branches, covering Implements, Field Seeds, Bulk or Garden Seeds, Haying Tools, Wool and Fodder Twines, Binder Twine, and any and all goods peculiar to his section of the country. Such a man, used in this way, becomes of great value, and is sought for and looked up to by an entire community.

HOUSEHOLD GOODS.—During the second week, chang-

ing your advertising, show windows, &c., to correspond, give attention to Household Goods. Coming under this head are all the lines of Cooking Utensils, Granite and Tin Ware, Cast or Hollow Ware, Pots, Skittles and Dishes, and the thousand and

one small articles that go to equip kitchen, pantry and cellar. As nearly as possible, both in arrangement and sale of such goods, the matter of relationship should be borne in mind, as Refrigerators, Ice Cream Freezers, Water Coolers, Filters, Ice Picks and Chips, for one family arrangement; Washing Machines, Wash Boilers, Washboards, Clothes Wringers, Ironing Boards, &c., for another. The sale of one often brings another. They go out together, and if all are plainly marked, as they should be, many of them have the habit of selling themselves. It is in these lines, too, possible as in no other, that cuts of the goods in the advertising columns of the local paper are of great value. Plenty of cut and little of talk concerning it will bring people to the store to learn further of the merit of the goods.

MILL AND FACTORY SUPPLIES.—For those who make it a part of their business, there is no more favorable time than one week of April in which to push Mill and Factory Supplies. While these go more or less all through the year, a good deal of special work is necessary to show a substantial growth in this department. No line of goods make a more attractive show window; no series of letters and quotations are more carefully read and noted. A show window filled with the various Packings, Babbitts, Brasses, Sheet Metals, Ratchets, Hammers, Lathe and Drill Chucks, Belting, Pulleys, Tackle Blocks, and the hundreds of things that might be mentioned, will attract more gazers and hold them longer than the development of almost any other subject it is possible to mention. In this connection there are saw mills, grist mills, tile mills, &c., scattered everywhere in the country and to be reached and sold by some one. The last decade has brought into existence hundreds of small machine and repair shops for Bicycle and general work. This is the season when they must cover their wants. These smaller concerns are mentioned incidentally, taking it for granted we all make the effort to sell the larger concerns with which we are surrounded. And this is their season of wants.

A Builders' Hardware Week,

with show windows, advertising and good work to correspond, would fit in admirably for a fourth week's work in April. We all have our lists of contractors corrected up to date. We should watch the publication of real estate transfers and of building permits. We should know from the class of residence or building whether owner or contractor will purchase the trimmings and finish needed, and in this, as in all else, we should go to the bottom, reaching excavator, stone contractor, brick mason (for Picks, Shovels, Barrows, Trowels and Hods); the plasterer for his Nails, Wire Lath, &c., and the carpenter contractor for Nails, Sash Weights, Sash Cord, and possible finish.

DOORS, MANTELS, VARNISHES, &C.—For those of us who handle Doors, Sash, Blinds and Frames in addition to all the balance, the month opens out, indeed, a chance for business. Then there come the Mantels, Grates and Tile Hearths, the inside finish in Varnishes, hardwood floors and wall tinting, ending up with the painter contractor for his Leads, Oils and Tints for outside and finishing coats.

This would end a pretty busy month, and while it has all been in progress, time should have been taken to

Put Away Winter Goods.

There are the Skates, all to be wrapped and boxed and an invoice card tacked to the outside. The Sled stock, or what is left of it, must be gotten out of the way for another year. The Fire Irons and Fire Stands

that are left over, the Soapstones or Foot Warmers, and all heavy weight Robes and Blankets. The latter should be placed in boxes lined with tar paper, or the paper inserted between them frequently, and all put away in such shape that the stock shows on the outside.

When all of this is done or largely through with for the month, it will have been a pretty busy April.

A SPRING CIRCULAR.

L. Thielman, an enterprising Hardware merchant of St. Cloud, Minn., is in the habit of issuing occasional circulars to prospective customers calling attention especially to seasonable goods. One of these is given below; another will be devoted to Refrigerators, Gasoline and Oil Stoves, Ice Cream Freezers and summer goods, and will be sent to the ladies. A fall circular will be sent in due course, and just before the Christmas season one relating to holiday goods. The following circular is sent especially to anglers and those interested in baseball, golf, &c.:

We wish to at this time announce to the sport-loving people of the city that our line of FISHING TACKLE, BASEBALL GOODS and GENERAL SPORTING GOODS will be larger than ever. We have added to our already Large Assortment of Sporting Goods the famous B. G. I. Company's GOLF GOODS, including wooden and iron Clubs, Caddy Bags, Rubber Tees and the latest and best style Golf Ball on the market. We will carry only the best in Tennis Goods, including WRIGHT & DITSON Tennis Balls, &c.

We bought direct, thus avoiding the middleman's profit, which benefit will be given our customers, and can say without hesitation that our line of the above goods (which will include many specialties and novelties) will be the largest and best retail assortment in the Northwest.

If you are in the market for any of the above goods it will pay you to see us before you buy. Remember this is not a side line with us, but one of our STRONG DEPARTMENTS.

To look—is a pastime; to price—is a pleasure; to possess—is a privilege. No trouble to show goods.

Very respectfully,

L. THIELMAN.

N. B.—We have a nice line of Indian Clubs, Dumb Bells, Punching Bags and Boxing Gloves.

EARLY SPRING IN THE HARDWARE STORE.

FROM A CITY RETAILER'S POINT OF VIEW.

All winter boxes have been accumulating. To reduce the pile all that is required is to place a good sized one on the pavement and they are hauled away at a clear gain of from 10 cents to 25 cents each. Balls of twine are gathered in a bunch by their loose ends, hung from hooks on the window post, suitably priced. A board 4 feet by 12 inches wide is painted a dark color, straight screw hooks are placed below each other at suitable intervals, on which are hung Whitewash Brushes. A margin is left on the board for the price—from 20 cents to 75 cents—and the board is hung outside. Nearby is hung the White Lime sign for Whitewashing.

The Pavement Display

Is made especially for Moving Day. Step Ladders are placed against the building with large price cards attached. Carpet Beaters, Brooms, Scrub Brushes and a variety of Buckets are placed on the pavement and in the doorway. Curtain Stretchers are brought out and added to the collection, and additions made to the array of Galvanized Garbage or Refuse Cans. These are displayed on the pavement all the year around, but now we increase the number, as nearly every mover leaves his old Can and has a new one sent to the house into which he is moving. Galvanized Washtubs are also put outside, and the "moving sidewalk" is complete.

In the Store

the stands are arranged to display Carpet Stretchers, Beaters, Tack Claws, Tack Hammers and Tacks, a specially large size box to sell at a nickel. Paraffine Candles, 6 inches long (12's), fill a large tray and are marked 1 cent each. Were it not for an ocular demonstration of the fact, the number sold would be incredible. With apparent reason the idea of selling Candles in this century of electric and Welsbach light is ridiculed, but they go—melt away like wax—not by the penny's worth, but in fives, tens and twenty-fives. Wall Paper Cleaner in tin cans is arranged where the pile attracts attention, priced plainly, as are all goods displayed. Seeds are on the stand that in February held Oil and Gas Heaters. Galvanized Cans holding a bushel are very convenient, and when filled to the brim with the different colored seeds are attractive. Sweet Pea Seed

is among the earliest Flower Seeds sown in the garden in this section. These are so popular that they are now bought in bulk where formerly a dozen or so 5-cent papers supplied the demand.

Seeds Consigned.

All Flower and Garden Seeds, with the exception of Lawn, Sweet Pea and Morning Glory, are consigned. They represent a \$50 investment by the grower, and an equal investment by the retailer in other goods. Settlement is made at the end of the season, late in the fall, when Seeds unsold are returned and a fresh stock deposited.

Light Supplies.

All apparatus for making light are placed conveniently. Small Lanterns to sell at 10 cents; Bracket Lamps from 25 cents to 75 cents, Electric Light Globes, Welsbach Mantles hung up in baskets at 10 cents to 50 cents, Gas Burners, Chimneys, Globes, Tubing, Goose Necks, Portables and Mantle Supports. These latter are comparatively new, but staple as Nails. Nails! I'd rather sell one 15-cent Mantle that I can with a breath dissolve into thin air than a keg of Nails that requires a lifting force of 106 pounds and produces no more net profit.

Paint.

A great cleaner is Paint; therefore these goods are arranged conspicuously and backed by color cards. Half pint cans of any color at 10 cents, up to the gallon can. A better profit is in the newer goods—Varnish Floor Paint, Varnish Stains, Enamels, Chair Paint and Iron Enamel, with a show of Brushes to suit.

Repair Display.

Space is given for a repair display, as our army is destructive and uses great quantities of Perforated Chair Seats, Brass Headed Tacks, Wrought Iron Repair Plates, Knee Plates and Corner Irons. Here there is a royal profit.

Mental Inventory.

We take a look around to study our condition. In the stock room Step Ladders are piled to the 12-foot ceiling. Glass bins are full. Wire Cloth and Poultry Netting in stock. Racks full of Shovels and Spades, Rakes and Hoes. In cellar Bulk Oils and Varnish, White Lead, Nails, Putty, Rubber Hose, Barrows. Store proper never in better shape for business, everything ready for the moving army. But how is it to know and be convinced that HERE is THE place to buy?

Two Essentials.

If the choice was given of using but two of the infinite number of means to attract trade, unhesitatingly these two would be a good location and show window display. No argument is required to convince a merchant of this who sees busy people, hurrying along, suddenly stop, reminded that in his window is what they were told to bring home. As the clerk produces a serrated edged Knife "like the one in the window" the retailer knows and appreciates an advertising medium of which the results are sure and tangible.

There Are Others.

In this century, however, there is no limit to the means of trying to secure the attention of the people, though there may be a limit to the result. While there are gold fields there will be searchers. While there are type and paper there will be advertisers; so into the Klondike of printers' ink plunges every merchant, big and little, with no more training than the ungeological digger, and with much the same result. An article on "Unsuccessful Advertising" would be instructive. It is a pity dead men tell no tales.

Limited But Fairly Sure Advertising.

Not being curtailed as to the number of advertising means, one is used fairly sure. Upon both sides of a stiff circular, 9 x 12, is printed a price-list of early spring necessities. A border is made by printing store number and street, headed by two of *The Iron Age* advertising cuts. Then in catalogue style follows a description, as crisp as possible, of the article, with the price. Our own boys are detailed to place these cards

under doors, keeping a memorandum of streets covered. This is followed by a large booklet embellished with cuts, many of which are furnished free by manufacturers or jobbers, as cuts of Rubber Hose, Step Ladders and Lawn Mowers.

Then when our army is settled for another year in their camp we start out the boys with colored cards, the shape and size of shipping tags, with string looped so they can be hung quickly over door knobs. All that is printed thereon is



British Letter.

FROM OUR SPECIAL REPRESENTATIVE.

The Glasgow Exhibition.

IT may, perhaps, be argued that we are overdoing the habit of exhibition. Buffalo and Glasgow are holding their exhibitions concurrently. I am inclined to think that for purposes of advertisement, at least, Glasgow offers greater inducements to Americans than does Buffalo. Glasgow is a live place, and American metals and metal products are familiar to Glasgow merchants. The coming Glasgow Exhibition will cover 73 acres. Most of the European Governments are officially represented, but Germany and the United States are taking no official part. There are a number of German and American exhibitors, however, particularly in the Machinery Hall. Russia is officially represented for the first time, the Russian Government having subscribed \$150,000, while the Czar has given a conditional promise to attend next July. The King of England will formally open the exhibition on May 1. Americans who are thinking of coming over should look to June or July. By that time everything will be in well oiled working order, while nothing will be stale. It seems to me to be an excellent opportunity to push American trade. American exhibitors scored splendidly at Paris; British manufacturers are straining every nerve to recover lost ground at Glasgow.

Smaller Exhibitions.

In a former letter I referred to a small gas exhibition at Barcelona. A gas and water exhibition will be held in Vienna from May 25 to June 25. During that month the general meeting of the German Association of Gas and Water Engineers will take place. The exhibition is intended to give members and the trade an opportunity of seeing all that the industry is capable of. The latest improvements in the use of gas will be especially emphasized. Another exhibition worth noting is an exhibition of British arts and industries at St. Petersburg, in the Touride Palace and grounds, to be opened next July. If American manufacturers can squeeze in with goods not barred by the recent adverse tariff—say, agricultural implements—they would have a splendid chance of doing business, as the exhibition is under such high auspices as practically to insure success. Another form of continual exhibition is that of sample rooms. Some time ago I directed attention to the German sample rooms at Constantinople. It is now reported that the United States exhibition has been removed to larger premises in the principal street and the business part of Constantinople. A healthy sign.

Another Chance for America.

One of the most striking points in the development of American exports is the stupendous growth of the agricultural implement trade. There is a great demand just now in Germany for labor saving agricultural appliances, in consequence of severe shortage of labor. The industrial progress of Germany has attracted farm laborers to the large centers. The German Government has now decided to send a specialist from Berlin to the United States to make a careful inquiry into the whole subject. He will spend the approaching spring and sum-

mer on American farms watching the actual operation of American machinery. During the winter he will visit the factories. Agricultural implement makers will, doubtless, do their best to walk into this gentleman's affections.

The French Demand for Hardware.

What with the natural fastidiousness of French buyers and the intricacies of the French tariff it is not easy to sell goods in France. But notwithstanding all these difficulties there is clearly a growing demand in France for foreign made Hardware. The following figures speak for themselves:

Imports, France, 1900.

Hardware (inclusive).....	\$10,500,000
Tools	850,000
Common Cutlery.....	48,000
Fine Cutlery.....	40,000
Locks	94,000
Nails	8,000
Horseshoe Nails.....	145,000
Wire Nails.....	3,500
Screws and Bolts.....	91,000
Lamps	530,000
Handles	120,000
Brushes	54,000

At the same time we must not forget that France does a substantial export trade. In 1900 she exported \$1,000,000 worth of Cutlery and \$17,000,000 worth of Hardware.

American Axes for the British War Office.

William Marples & Son, Limited, of the Hibernia Works, Sheffield, have received an order from the War Office for 2600 American Felling Axes, for the use of our troops in South Africa. The Tool specified is the Collins Handle Felling Axe. In this instance neither quality nor price counted; promptness of delivery was the only consideration. This confirms a conversation I recently had with a prominent war office official. He told me that his department always buys in Great Britain if it possibly can, and that when he went to Germany or America it was for reasons of urgency rather than for quality or price. He remarked that British manufacturers were generally very near the mark, both in price and quality. But this hardly tallies with the experience of many British municipalities, where a preference for American goods is often openly expressed.

Stoves, Tubes and Direct Trading.

At the present moment the Gas Fittings trade is very much in the public eye. The threat of a large gas company to make their own Tubes, Stoves and Fittings has fluttered many dove cotes. This particular gas company complain that Stove makers give a larger discount to ironmongers, who buy in twos and threes, than to gas companies, who buy in hundreds. There is unconscious humor somewhere, for ironmongers have been very strongly protesting against the way Stove makers favor the companies. My own view is that the Stove trade may linger yet a little longer with the retail trade, but it is bound ultimately to be absorbed by the gas companies and the municipalities. A cheap and effective Stove with which ironmongers could undersell the companies might save the situation—at least temporarily. But when it comes to making Tubes I imagine the companies could do far better in America. The reason for making Tubes is thus succinctly stated by a gas engineer:

The manufacturers evidently thought that the companies could well afford to be pressed down, especially in the case of Wrought Tubing for laying services and for the supply of coin meter fittings. In connection with the prepayment supplies a great deal of Tubing was required. They used to get 75 per cent. discount off the total gross. Now they only got 50 per cent. off the gross; and it followed that, instead of paying 25 per cent. of the whole, they paid 50 per cent.—that is to say, the price was double. Do what he could, he could not force these makers down. In his opinion, the time had come when they should make Tubes themselves, and the big companies could do so by combining.

If American Tube manufacturers can do better than this they should communicate with George Livesey, or the Metropolitan Gas Company, London.

Fry-Gregory Hardware Company have bought out Lawson-Sears Hardware Company, Union City, Tenn. They are increasing the former stock.

Australian Notes.

FROM OUR SPECIAL CORRESPONDENT.

TRADER developments in Australia have not been on any remarkable lines during the past few weeks. It is, however, interesting to note the arrival of the Tyser line steamer "Star of Australia," from New York, with the heaviest shipment of manufactured goods ever landed here. Her cargo list covers 120 pages, each half as big again as an average foolscap sheet. For Auckland the vessel carries an entire gas plant weighing 500 tons. Her manifest also includes what is said to be the largest shipment of Sewing Machines ever landed here, reputed at some 400 tons, while Lawn Mowers, Reapers, Wagons, Shotguns, Rifles, Revolvers and Ammunition are reckoned by the ton. Some 80,000 cases of Kerosene, 1000 tons of Hardware, 1200 tons of Bar Iron, &c., go toward comprising a cargo referred to as the record one from your country to this.

A Speculative Prognostication.

In New South Wales the merchants are, to a great extent, preparing themselves for speculation in anticipation of Federal duties being imposed, and it is curious to note that they are largely handicapped by finding their customers, the retail trade, equally anxious for a share in the spoils and inclined to stock heavily also. If the retailers stock up, the wholesalers will probably have to grant an extension of time when the bills mature, and thus practically finance their customers in speculations. How far the expenses of holding, such as insurance, storage, interest, &c., will work as a set off against these possible profits remains to be seen. When considerable stocks are accumulated and a duty imposed, the stocks will act as a drag on the market, and prevent it from rising to the full extent of the duty until some time has elapsed.

The Visit of Royalty.

The demand for certain classes of Ironmongery in connection with the forthcoming royal visit here will not be nearly so great as was anticipated, owing to the death of Her Majesty interfering with the celebrations which would otherwise have been held. Electric Wires and Appliances are in fair demand; also Tin Sheets for Reflectors, Shields, Copper, Iron Pipes, &c., for lighting purposes.

Hardware and Lumber from America.

The building trade in Melbourne has not been so brisk for many years as it is at present; consequently Builders' Hardware is having a very good inning, while the timber merchants are very busy, and large shipments of American timber are continually arriving.

Predicted Railway Developments.

No doubt a comparatively early result of the altered state of things in the new commonwealth will be the effective carrying out of the long delayed idea of a trans-continental railway to connect Perth, Western Australia, with Brisbane, Queensland, via Adelaide, Melbourne and Sydney, a distance of several thousand miles. This country bids fair to be a very heavy customer for Steel Rails, Rolling Stock, &c., in the near future. Apart from this consideration, Queensland and New South Wales will both very shortly call for tenders for large quantities of Rails and Fish Plates. There appears to be some delay in announcing the tenders, but your manufacturers, by keeping in touch with the Agent General in London, should have early advice of particulars.

A New Steamer Line.

A regular line of steamers has been inaugurated between New Zealand and South Africa by the Shaw-Savill, Tyser and New Zealand shipping companies. The prospects of trade between Australia and South Africa indicate good possibilities.

Decreased Gold Production.

The Australasian gold production for the year 1900 appears to show some slight retrogression, the output having been 4,175,000 ounces, as against 4,461,000 ounces in 1899. In face of the steady progression which has characterized these figures for many years past, the results for 1900 are somewhat disappointing.

The Wool Crop for 1900

was greater than for 1899, but, unfortunately, owing to the fall in prices, its value will be considerably less.

Agricultural Machinery.

The Melbourne daily papers, the one a free-trade organ and the other a protectionist journal, are continually wrangling over their pet theories, and one of their standard quarrels is the price of Reapers and Binders. It appears that the landed price here, including the Transport Truck and Sheaf Carrier, is somewhere about £30, while they are sold to the farmers for £50 cash. The reason for the higher price appears to be the custom which has grown up among the various agents here (though some of the farmers deny the truth of the statement) of repairing without charge for a certain time after selling the machines; but even so there appears to be little doubt that the profits in this particular Hardware line are very substantial indeed.

Forecasting the Metal Markets.

The opinion appears to be held here that the metal markets will be on the down grade during the current year, owing, it is said, to production having largely overtaken consumption in your country. In selling cheaper abroad, you appear to have compelled English and German producers to reduce prices in order to meet competition. Pig Iron, Tin and Copper prices appear to be on the down grade, while corresponding reductions seem the rule for Finished Iron and Steel.

Coal.

The increased price of Coal is beginning to make itself felt among iron founders in Melbourne. The railway Coal contracts, tenders for which have just been accepted for something like 200,000 tons of Newcastle Coal, provide for delivery in Melbourne at 17 shillings 6 pence a ton, an advance of something like 3 shillings 4 pence per ton on former prices. With this increase and various other small local causes, the iron founders are not having too good a time.

Mineral Production.

Queensland minerals produced during the year include many of the rarer products, such as, for instance, wolfram, 260 tons, bismuth, manganese, &c. This State will in time take the lead as the mineral producing State of Australasia.

THE RICHARDS & SENCENBAUGH MFG. COMPANY, Aurora, Ill., have absorbed the business of Coats & Corlett, and will greatly increase their manufacturing facilities. Their products are Door Hangers and other Hardware Specialties. The officers of the company are now as follows: President, S. S. Sencenbaugh; vice-president and general manager, C. E. Corlett; secretary, Charles Sencenbaugh; treasurer, M. C. Richards.

Thompson & Mead, Redwood Falls, Minn., have dissolved partnership, C. W. Mead succeeding. Mr. Mead has also purchased the Agricultural Implement business of King Bros., adjoining, and now has an establishment with 120 feet frontage.

The Weeks Hardware Company, with stores at Centerville and Prosperity, Mo., have lately increased their capital stock from \$30,000 to \$50,000. The company are wholesale and retail dealers in Shelf and Heavy Hardware, Stoves and Tinware, Mine Supplies, Sporting Goods, &c.

Daubersmith & Hess, Cresco, Iowa, have purchased the business of H. T. Nicolai & Co., at Prairie, Wis. They will add Harness to the former line of Shelf Hardware, Stoves, Tinware and Agricultural Implements.

A. E. Marshall & Co. have succeeded to the business conducted by the late S. C. Redgrove, Lyons, N. Y. The new firm have made a number of improvements in the store, including an outfit of shelf boxes.

W. M. Wheelock has purchased the business of Wheelock & Root, Boone, Iowa, and will continue at the old stand.

SHOW WINDOW DISPLAY.

This Department is to give information in regard to the use which may advantageously be made of show windows of Hardware stores, with practical suggestions in regard to the arrangement and display of goods and other methods of attracting business.

The trade are invited to contribute information in regard to methods which have proved satisfactory, with descriptions of attractive displays. Inquiries also are solicited, to which careful attention will be given.

WINDOW DISPLAYS.

BY A MARYLAND MERCHANT.

What are we in business for but to make money?

How can we make money unless we can sell goods?

How can we sell goods unless we show them?

How can we show them to the public without the show window?

These are practical questions that every Hardwareman should ask himself. We look upon the show windows as of more importance than the showcases. One can so arrange goods on the inside as to make a display without the use of cases that will be attractive and interesting for the customer who was led to examine the line by the display he noticed in the windows.

THE FREQUENCY OF CHANGING THE DISPLAY

depends largely upon the variety of goods carried. If the dealer's stock consists not only of staples but also of Hardware novelties and special goods the windows should be changed quite frequently, always using staple goods throughout the display to advertise the main business. Seasonable goods should be used for displays some time before they come into use. If the store has two or more show windows, change one of them at least once a week.

Fill one with Hardware, the other with novelties or Sporting Goods, and the third with House Furnishing Goods, using a nice sample Range, Washing Machine, &c. These will make it attractive for the housewife. Place short locals in the county or daily papers, calling attention to the window displays. This will lead the public to notice the windows more particularly and will often bring them in the store.

INCREASED SALES

are most assuredly traced to window displays. Thousands of dollars' worth of goods are sold by window displays, and no store is more attractive to-day than the up to date Hardware store with its large variety of goods that are used by all classes of people. The time was when the Hardware store was looked upon as a dirty black place, and such a thing as window displays or lady clerks and customers were almost unthought of, but to-day one cannot do without the very best window displays. They will quietly work up sales.

THE BEST GOODS TO SHOW.

The most attractive goods carried in stock should always be found on exhibition in the show windows. Without the use of these one cannot make windows attractive enough to cause special notice. Use all the talent at hand in arranging the displays to the very best advantage.

New goods should always find a place in show windows as soon as they are opened up if seasonable. Special goods that have not been handled or something new for which the agency has just been taken cannot be placed before the public with as little expense nor with as good results as are obtained by the show windows.

PRACTICAL SUGGESTIONS.

Use the windows as showcases to prevent goods from becoming shop worn.

If possible have the windows protected on inside by glass fitted in sash and hung on weights, the same as

used in a house, giving the advantage of forming a better show window display on inside as well as outside, and at the same time permitting the windows to be used to sell from the same as showcases. If this is done the customer can have the sample on exhibition, which should be replaced with a bright one from stock, thus avoiding the accumulation of shop worn goods. After several years' experience this has proved very practicable and a great saving of time and labor.

MARKING PRICES ON GOODS.

Prices should generally be marked on goods shown in the windows. No window display is as attractive to the inquiring mind as that one nicely arranged with prices marked in plain figures, thus not only impressing the public with the display, but also the price, and at the same time leading to future sales, often preventing a competitor, the department store or a catalogue house, from receiving the order.

ARRANGEMENT OF WINDOW DISPLAYS.

Be practical in the displays. Have some certain line of goods to display. Give them the most prominent place. Fill in with such goods as far as possible as are used in connection with those displayed. Offer suggestions by attractive signs, leading the public on as far as possible to inquire more about the line being displayed.

AN EXAMPLE: If a window is being trimmed with Carpenters' Tools do not simply place a few Tools in the bottom of the window, but build them up on a sloping incline, or on steps so arranged that each line of Tools will appear above the other, placing each size in rotation, using some attractive home made figure to draw attention to the display. This can be done in



Suggestion for Window Display.

many ways. A figure of a man may be made out of putty, much as the snow man was made in boyhood days, or a board may be sawed out into the shape of a

man. Stick or drive him full of nails just far enough to hold them to their place, placing a card over his head, reading like one of the three following:

I AM A NAILY MAN.

CARPENTERS' TOOLS USED AND SOLD
BY THE NAILY MAN.

ALL TOOLS IN THIS WINDOW
GUARANTEED BY THE-NAILY MAN.

This will make an attractive display, and the idea can be modified and carried out in almost any line.

If one wants to display a line of Spoons let him make a figure of a dog. Cover him with Spoons; call him a spoony dog. Place the line of Spoons carried in stock all around him, and a display will be had that will advertise the store throughout the town or city.

KITCHEN DISPLAY.

A very attractive kitchen display can be arranged by placing a Range in the window, trimming all around it with a full line of Cooking Utensils and Specialties such as are carried in every day stock, and where practicable scenery can be used for background made by painting comic figures or kitchen scenes on muslin in a very cheap way. These will add very much to the display.

A CHINA DISPLAY

A china display that is particularly attractive for the holiday season can be arranged by placing in the window a table about 12 inches high made of rough boards and nicely covered with linen. Place on the table a handsome set of dishes in the same manner as a table is set at home, using fancy cut goblets, Paper Napkins, Silver Knives and Forks, &c., and filling the large dishes with such fruits as apples, oranges and bananas. This makes it very inviting, and at the same time advertises the line of china. The effect of the display can be much improved by the use of wreaths and festoonings made from running vines and pine tree branches, and by displaying a comic figure of Santa Claus, a wild turkey or a pig trimmed with Knives, Forks, Spoons, Small Hardware, &c.

The Elberton Hardware Company have purchased the business of the Bewley Hardware Company, Elberton, Ga. The Elberton Company will increase their capital stock June 1.

The Milligan Hardware & Supply Company have succeeded the Eagle Hardware Company at East Liverpool, Ohio. The capital stock has been increased from \$15,000 to \$50,000.

J. Keating of J. Keating & Son, Afton, Iowa, has sold his interest to M. W. Keating and retired from business. The firm style has been changed to M. W. Keating & Co., who will continue at the old stand.

J. H. Johnson & Co. have lately opened up in business in Oskaloosa, Kan., carrying a line embracing Hardware, both Shelf and Heavy, Stoves and Tinware, Farm Implements, Sporting Goods, &c.

Hanska Hardware & Implement Company have lately opened up in business at Hanska, Minn., carrying Hardware, Shelf and Heavy, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

Garvin & Lefforge have succeeded Garvin & Bruce at Windsor, Ill. A large room has lately been added to the establishment, which will be devoted to stock of Agricultural Implements.

Emison & Nicholson have succeeded Emison & Co., Vincennes, Ind. The new firm are increasing the stock in the different departments, General Hardware, Agricultural Implements and Seeds.

PRIZE COMPETITION

Closing April 15, 1901.

SUBJECT:

Hardware Store Window Display.

The matter of show window arrangement is one of recognized importance, and the object of this competition is to draw out practical information and suggestions which will be of service in guiding retail Hardware merchants in arranging their show windows so as to attract trade.

The following are suggested as some of the points which may be touched upon in considering the subject:

The frequent neglect of window displays.

Common mistakes in arranging windows.

Advantages of attractive show windows.

Whether increased sales can be traced to window exhibits.

Fixtures for displaying goods, such as racks, shelves, stands, &c.

Mechanical appliances which may advantageously be used.

The lighting of windows.

The color of backgrounds.

How variety in display can be secured.

The desirability of striking and ingenious displays to attract attention.

The kinds of goods which yield best returns.

Whether few or many kinds of goods should be shown together.

Suggestions in regard to seasonable displays.

The frequency with which changes should be made.

The care of goods exhibited to prevent them from being injured or shop worn.

Whether prices should be marked on goods in windows.

How to utilize employees' skill in window display.

The relation of window display to local advertising.

Examples of good arrangement.

NOTE I.—The above suggestions are given merely as indicating the general scope of the subject, but all contributors are at liberty to treat it in their own way.

NOTE II.—It should be borne in mind that it is desirable that the contributions be useful to retail Hardware merchants, helping them in the direction of good methods of window display. Definite practical suggestions to this end are therefore requested.

NOTE III.—Photographs or sketches are very desirable when they serve to illustrate any method

of arrangement or any particular window display of which a description is given. It is not necessary that such photographs or sketches be artistic or elaborate, so long as they indicate the arrangement or display in question.

NOTE IV.—With a view to encouraging the contribution of briefer and less formal papers, as well as those covering the subject more completely, a number of prizes will be awarded ranging from \$50 to \$5. These prizes will be determined according to the practical usefulness and general merit of the contributions.

The following prizes are announced:

First prize.....	\$50.00
Second prize.....	25.00
Third prize.....	15.00
Fourth prize.....	12.50
Fifth prize.....	10.00
Sixth prize.....	9.00
Seventh prize.....	8.00
Eighth prize.....	7.00
Ninth prize.....	6.00
Tenth prize.....	5.00

This competition is open to all. We shall have the privilege of publishing any of the contributions received. Contributions are to be received not later than April 15, 1901. They should be addressed as follows:

THE IRON AGE,
232-238 William street,
New York.

WINDOW DISPLAY COMPETITION.

Price-Lists, Circulars, &c.

TERRE HAUTE SHOVEL & TOOL COMPANY, Terre Haute, Ind., for whom Wm. C. Barker Company, BNo. 21 Produce Exchange Building, 9 Stone street, New York, are export representatives: Illustrated Catalogue of Forks for all purposes, such as handling hay, straw, manure, grain, potatoes, ore, oysters, coal, coke and cotton seed, together with baler, spading, stable, tanners', ballast, sluice and other Forks of this character. There are also shown large lines of Hoes, Rakes, Spades, &c., for a variety of purposes.

UNION HARDWARE COMPANY, Torrington, Conn., New York office in charge of Tower & Lyon, 95 Chambers street: Supplement to Dog Collar price-list of 1900, illustrating and describing new lines of leather Dog Collars, particularly special Collars for bull dogs.

ALLERTON-CLARKE COMPANY, 97 Chambers street, New York: Illustrated catalogue for the season of 1901 of Elk and Dixie Bicycles, made in four models, priced variously from \$40 to \$25 list, inclusive.

WILMOT & HOBBS MFG. COMPANY, Bridgeport, Conn.: Catalogue devoted to their Oilers, which are manufactured from the best quality of cold rolled Swedish steel, prepared at their own rolling mills. The company state that recent additions to their plant have materially enlarged their capacity, so that they are able to fill orders promptly. A late addition to their line of Oilers is the Automobile Can for gasoline, benzine, naphtha, &c.

COVERT'S SADDLERY WORKS, Farmer, N. Y.: Illustrated catalogue and price-list No. 21, containing 60 pages, and representing Covert's Trimmed Neck Yokes, Neck Yoke Centers, Harness Snaps, Rope, Web and Chain Goods, and specialties in Saddlery, Coach and general Hardware.

SIMEON L. & GEO. H. ROGERS COMPANY, Hartford, Conn.: Catalogue No. 2, 53 pages, representing their line of Rogers' Silver Plated Flat Ware and Cutlery. Their extra plate goods are stamped A1, their sectional plate goods XII, and their triple plate goods 12. It is stated that their XII, or sectional plate, Spoons and Forks are plated with the highest grade of nickel silver. These goods are first plated in the regular way and then plated again by the sectional process on all exposed parts.

LUFKIN RULE COMPANY, Saginaw, Mich.: Catalogue devoted to Measuring Tapes, Rules, &c. It represents their large and complete line of Measuring Tapes, including their Reliable, Reliable Junior, Royal, Challenge, Engineers' Pattern and Germania Steel, Metallic with flush and folding handles, Junior Metallic, Sterling Linen, Pocket Steel and Linen, Universal Ass Skin, &c. The latter part of the catalogue is devoted to their line of Rules, Log Calipers, Lumber Gauges, Perfection Glass Board, &c.

DAIRYMEN'S MFG. COMPANY, 357 Warren street, Jersey City, N. J.: Catalogue of Dairy Specialties manufactured and dealt in by them.

H. F. HERTZOG, Reading, Pa.: 1901 catalogue of Bicycles and Sundries.

DEMPSTER MILL MFG. COMPANY, Beatrice, Neb.: Price-list and circulars relating to their line of Wind Mills, Pumps, Tanks, Grain Drills, Well Machines, Cultivators, Gasoline Engines, Blacksmith Trip Hammers, &c.

NORTH BROS. MFG. COMPANY, Philadelphia, Pa.: Pamphlet devoted to the Lightning, Gem, Blizzard and Crown Ice Cream Freezers, the Lightning and Gem Toy Freezers and the Improved Philadelphia-Seaman 40-quart power Freezer. Another pamphlet gives attention to their Yankee Ratchet Screw Drivers, Spiral Ratchet Screw Drivers, Chuck with Drill Points, Automatic Drills, Reciprocating Drill and Pocket Magazine Screw Driver.

Among the Hardware Trade.

John Williams has purchased the interest of S. S. Reber in the Hardware firm of Allen & Reber, Leaf River, Ill., and the firm style is now Allen & Williams.

Thos. R. Jones & Son, Lima, Ohio, are expecting to remove to larger and more convenient quarters in the near future.

C. W. Casner has succeeded Casner & Galbraith in the Hardware business in Keosauqua, Iowa.

James Mulholland has admitted a partner in his Hardware business in Stanberry, Mo., and the style is now Mulholland & Garrison. They have lately completed a large wareroom.

F. C. Oller & Co. have purchased the business at Dixon, Ill., formerly conducted by R. H. Howell.

Hood & Cleveland have bought the Hardware business of Alexander Beebout, Fairmount, W. Va.

I. L. Avery has bought the furniture and Farm Implement business formerly conducted by C. F. Dodson, Wakefield, Kan., and to the stock thus acquired has added a line of general Hardware.

Stevenson & Osborn have succeeded J. F. Stevenson at Anamosa, Iowa.

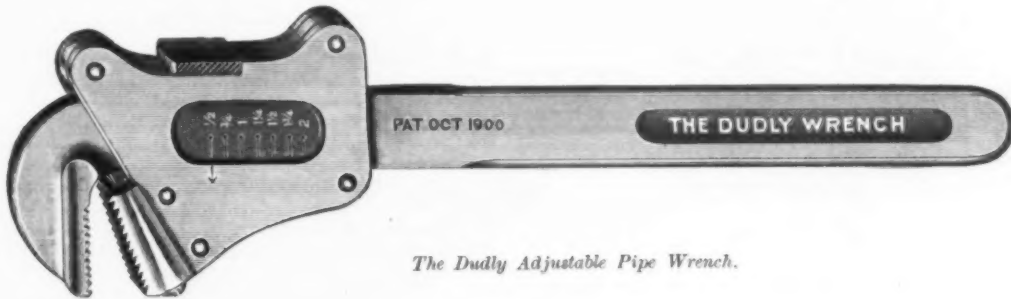
Miles & Simms, Lewiston, Ill., have dissolved partnership, and C. R. Simms is successor under his own name. Mr. Simms will add materially to the stock formerly carried.

Paxton Hardware Company are successors to Paxton & Bartlett, Portis, Kan.

Kimmons Bros., Findlay, Ohio, have sold out their business and retired, after an experience of more than 43 years.

The Dudley Adjustable Pipe Wrench.

The pipe wrench herewith illustrated is designed to grip a rod, bolt or pipe from $\frac{3}{8}$ to 2 inches in diameter.



The Dudley Adjustable Pipe Wrench.

It has a graduated scale which shows the operator how to set and adjust it, which can be done instantly. The lower jaw is movable and slides, when the wrench comes into action, upward to the narrow part of the jaw opening, working like a wedge and securing, it is explained, a firm grip on the object. Rack teeth on the sliding jaw engage with teeth on the front edge of the stock. A coil spring placed in a channel brings the jaw block back to its normal position. The action is quick, and the grip is claimed to be positive. The wrench is manufactured by the A. Dudley Mfg. Company, Menominee, Mich., who issue a circular embodying commendatory statements from machinists and machinery manufacturers who have tested the wrench.

The Sprung Washing Machine.

The American Mfg. Company, Arlington Heights and Lockland, Ohio, are offering the washing machine shown

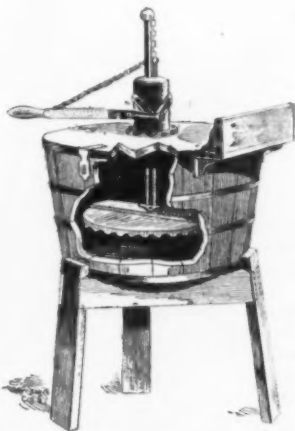


Fig 1. -The Sprung Washing Machine

in the accompanying cuts. The special features claimed for the washer are simplicity of movement and double action. Every time the handle is moved back and forth, which, it is remarked, is about once a second, the corrugated, disk shaped rubbing and squeezing board, shown in Fig. 2, is raised and pressed down alternately in quick succession. At the same time the board makes a two-thirds revolution back and forth, so that the clothes may be alternately soaked, squeezed, rubbed and agitated. In Fig. 2 the lid is shown on the right, and on the left the reverse side of the lid is shown, with the rubbing and squeezing board. The handle is attached to an axle, the latter in case hardened rollers, which move in a crescent shaped slot in the cylinder. A hook which slips in and out of the notches in the ratchet, and which is held in place by the chain attached to the handle when the machine is in operation, allows the squeezing board to be raised or lowered to accommodate any amount of clothes placed in the machine. The washer is detachable for ease in handling, the lid having separable hinges so it may be lifted off the tub, while the

tub fits in the tripod stand and may be lifted out. The tub is of white cedar, with corrugated sides and bottom and malleable galvanized castings. It is claimed that on account of the double motion of the machine the

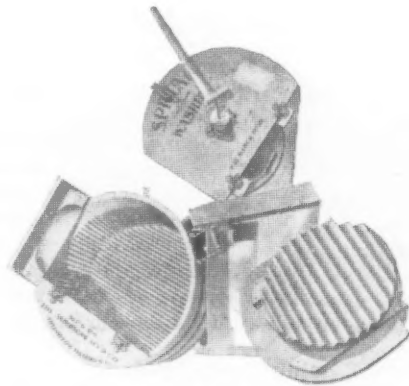


Fig. 2. -View of Detachable Parts.

of the cylinder, giving the machine an easy, light running movement.

The Admiral Combination Lamp.

The lamp here illustrated is offered by the Admiral Bicycle Lamp Company, Columbus, Ohio. In addition to the oil fount shown in Fig. 2, the lamp is provided



Fig. 1. - The Admiral Combination Lamp.

with a gas fount in which carbide is used. These founts are interchangeable, so that either may be snapped into the lamp for use, as desired. It is explained that the oil flame will not jar or blow out, and as the lamp is provided with a chimney the flame is clear and steady. With the gas fount the water is fed through a cone seat valve at the base of the carbide chamber, thus, it is remarked, using the carbide itself as an absorbent. This method, it is stated, prevents the coating over of car-

bide and also allows a ready outlet for the gas. The manufacturers claim that the gas lamp will not freeze



Fig. 2.—The Oil Fountain

while in use in the coldest of weather; that the carbide chamber is surrounded by a water reservoir which keeps the lamp cooler in summer and warmer in winter, and that the two lamps in one are economical to use.

Miscellaneous Notes.

Grindstones.

The Wilcox Mfg. Company, Aurora, Ill., have added to their line of goods the item of grindstones, both mounted and loose. The company have become interested as stockholders in the Independent Stone Company of Cleveland, Ohio, who are owners of large quarries and are able to furnish all grades of grindstones, scythe stones, oil stones, &c. The Wilcox Mfg. Company, being large manufacturers of the Velox ball bearing mounted grindstones, believe their friends will be pleased to know of this addition to their lines.

Aluminum Solder.

One of the obstacles to the extension of the use of aluminum by sheet metal workers and other mechanics has been the absence of an absolutely efficient solder that will stand all tests, and yet be easy of application by the ordinary workman with the common tools used in applying any solder. The American Hardware Mfg. Company of Ottawa, Ill., are putting on the market a new aluminum solder and flux that will, they claim, overcome this difficulty. By the use of this solder and flux, aluminum, they state, can be soldered as quickly as any other metal, with similar results to that given by the ordinary half and half solder. Any ordinary soldering iron, tinned with common solder, and using their solder and flux, it is stated, will do the work. The company give the following directions for the use of their preparation: "Care should be taken to scrape or file castings or sheet surfaces that are to be connected. Apply a light coating of flux and proceed as in the ordinary method, with the iron or sweat solder. The aluminum solder will not flow like ordinary half and half solder, but will flow to some extent, care being taken to keep the iron hot. The solder and flux will not discolor the metal, but can be worked or polished the same as any other metal or alloy." The company are prepared to furnish the solder in any quantity, large or small, full directions going with every stick. They will also be glad to furnish any information desired by the trade.

Snell's Machine Bits.

The Forest City Bit & Tool Company, Rockford, Ill., are manufacturing a full line of Snell's machine bits. These bits are referred to as made from Swedish steel, and are fully warranted against defects in material or workmanship. They are made of any diameter and any length of twist and dimensions of shank desired. The screw points are of standard size and thread.

Hart Hardware Company, wholesale exclusively, Louisville, Ky., have lately purchased a large warehouse on the Indiana Bridge Company's tracks. This building is situated at the corner of Fourteenth and Magazine streets, and is 52 x 210 feet, three stories high, with a 14-foot basement. The company now occupy six warehouses in all.

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Coates Twentieth Century Model Clipper.

The Coates Clipper Mfg. Company, Worcester, Mass., are offering a new line of clippers, as shown herewith. The handles are constructed on the principle of a pair of pliers, and while the fingers of the operator are moving



Fig. 1.—Coates Twentieth Century Model Clipper.

in a perpendicular plane, the plates vibrate in the horizontal plane. The opening and closing of the hand, it is pointed out, is perfectly natural, causing no strain on the hand or wrist, which is left free to move up or down, right or left. To the permanent handle is attached a

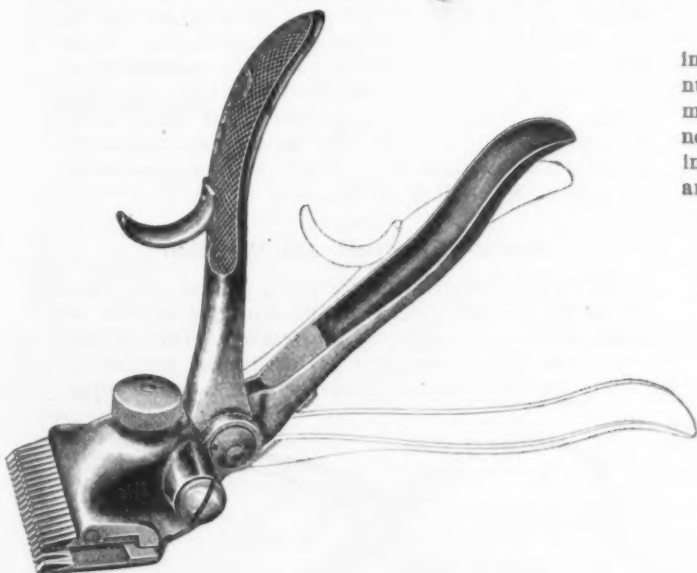


Fig. 2.—Angles at which Coates Clipper Works.

guard which passes between the thumb and finger. The movable handle, it is remarked, is of such a shape that the hand readily conforms to it. The clipper works with equal facility, it is stated, when the handles are at an angle of 0 or 90 degrees with the head, as indicated by



Fig. 3.—Coates Clipper Comb.

the light lines in Fig. 2. It is remarked that three clippers are included in one—a right hand, left hand and jointed clipper. This clipper is adapted, it is shown, to both large and small hands. The teeth of the comb, Fig. 3, are made of sheet metal inserted in a steel band. This construction is alluded to as furnishing a very thin and smooth tooth, which materially adds to its readiness in going through the hair, and as enabling the operator

to cut hair of No. 1 and 2 sizes. The clippers are furnished with ball bearings, the balls being retained in a hardened steel case, to serve the double purpose of a dust proof bearing and a ball retainer.

Revolving Display Stand and Mist Machine.

The Galesburg Cornice Works, Galesburg, Ill., are offering a display stand and mist machine, illustrated herewith. They are designed for display-



Fig. 1.—Revolving Display Stand and Mist Machine.

ing green vegetables in summer and fruits and nuts in winter. The stand shown in Fig. 1 is made of galvanized sheet metal and galvanized wire netting. With the mist machine attached it stands 42 inches high. The base of the stand is 33 inches in diameter and 5 inches high, strengthened by heavy gal-

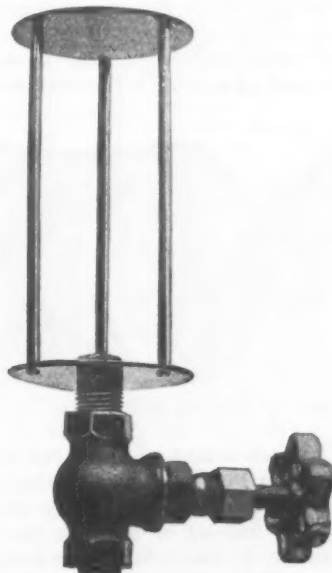


Fig. 2.—The Mist Device.

vanized wire rods at the top and bottom edges. A convex bottom, to catch the water, pitches toward the center, where the waste tube is located. A tapering central standard is attached to the base with suitable bearings for the revolving shelves. These are made of galvanized wire netting braced and strengthened with galvanized rods. The shelves are attached to a tapering tube, which fits over and revolves around the central standard. Provision is made, it is explained, against wear and to minimize the friction. The entire stand is painted two coats of green, which color is in keeping with the goods displayed. The mist machine, Fig. 2, is made of brass, nickel plated. Two metal disks are connected by three rods, and a brass nipple is connected to the bottom disk. The nipple has a hole, the size of No. 30 wire, through

the center. The hole allows a slender thread of water to shoot against the disk at the top, which converts the water, it is shown, into a mist or cloud of moisture to float over the vegetables displayed. The device is connected to the water supply by a nickel plated globe valve, which is threaded to fit $\frac{1}{4}$ -inch gas pipe, which passes up through the central tube of the display stand. A funnel shaped shield attached to the bottom of the valve is to prevent water following back around the pipe. The manufacturers state that the machine does not throw a spray, scattering water about the store, but just enough moisture to keep green vegetables fresh and crisp. It is pointed out that it is impossible to use too much water, and that the device can be used inside a store or on the sidewalk.

Bull Dog Collar.

Union Hardware Company, Torrington, Conn., New York office in charge of Tower & Lyon, 95 Chambers street, among recent additions to their line of dog furnishings, have put on the market a series of bull dog



Fig. 1.—Bull Dog Collar No. 32,010.

collars, one style of which is here illustrated. This style of collar is made in six different numbers, the principal differences being in the width and length of the collar and the brass trimmings. The novelty of this collar is the method of fastening the buckle and D-ring,

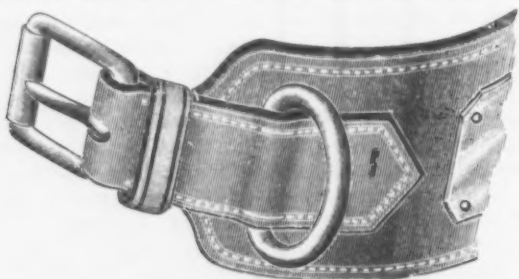


Fig. 2.—Method of Securing Buckle Strap and D-Ring.

to the latter of which a leading chain can be attached, as shown in detail in Fig. 2. It will be seen that the D-ring is secured between the buckle strap and the main body of the collar, instead of between the two thicknesses of the collar, as heretofore, to which there was serious objection. The collars are made of best quality heavy black leather in $1\frac{1}{2}$ and 2 inch widths and vary in length from 14 to 20 inches. In the matter of ornamentation the brass studding is both smaller and larger, varying with the style of the collar in the other numbers.

The Twentieth Century Power Groover.

The belt power groover shown herewith is offered by the Indianapolis Elbow Company, W. A. Wheeler, proprietor, Indianapolis, Ind. The machine is designed for grooving any kind of sheet metal work not more than 30 inches long, nor less than 3 inches in diameter, No. 22 gauge and lighter. It is explained that the machine can be easily adjusted to make any desired length of stroke

under 30 inches. In use the operator stands at the front end of the machine, slips in a joint of pipe and at the same time lifts the clamp A up to nearly a vertical position, but does not close it until he is ready for the grooving, as the clamp is the operating lever that starts the machine to work, through its connection with the side rod D. The pipe is now grasped in both the operator's hands, with the clamp A resting against his shoulder while he is adjusting the seam under the roll. When



The Twentieth Century Power Groover.

ready for the operation the clamp is pushed shut by a slight forward movement of the body. This causes the roll carriage to start forward over the seam, grooving and rolling it down at the same time, and after passing off at the end, automatically knocks down the clamp A, reverses itself and returns to the starting point to rest. The makers state that with a little practice an active young man will groove from 400 to 500 joints of stove pipe an hour, and will be able to keep it up all day, as the work is chiefly a matter of manipulation. Three sizes of groovers are furnished with each machine—3-16, 5-16 and 7-16 inch; also two flattening rolls, five rolls in all. The tight and loose pulleys are 9 inches in diameter, with 3-inch faces. The machine is designed to be run 375 revolutions per minute. As now constructed the groover is mounted on iron legs.

Never-Slip Fruit Jar Wrench.

Paxton Hardware Mfg. Company, Paxton, Ill., have put on the market the Never-Slip fruit jar wrench, as shown in the accompanying illustrations. This novelty is intended as a convenience for easily and quickly removing the metal top of a glass fruit jar without injur-

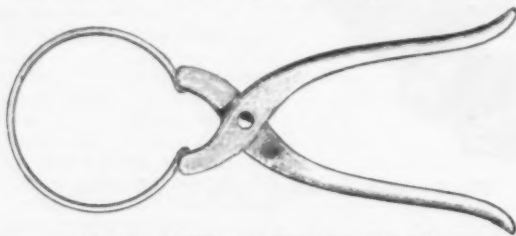


Fig. 1.—Never-Slip Fruit Jar Wrench.

ing the lid. It is also suitable for screwing the tops on when the jars are filled. The wrench consists of a pair of special pliers, into the ends of which fit a circular spring steel wire of No. 11 gauge, and of the correct size to grasp the metal top of a Mason fruit jar, being usable in connection with any size jar. In use, by forcing to-



Fig. 2.—Method of Using Wrench.

gether the plier handles, the wire, which always maintains its circular form, is made to tightly clasp the lid, and as the pressure is always uniform, the top is not injured. Fig. 1 shows the article as put on the market complete, Fig. 2 illustrating the method of using it.

Current Hardware Prices.

REVISED MARCH 26, 1901.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33½@33½&10% signifies that the price of the goods in question ranges from 33½ per cent. discount to 33½ and 10 per cent discount.

Cut Prices.—In the present condition of the market there is a good deal of cutting of prices by the jobbing trade, whose quotations are often lower than those of the manufacturers.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (May 3, 1900), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters Blind—

Domestic, per doz. \$3.00...33½@33½&10%
North's...10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent...25&35
Taplin's Perfection...30%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvils...7½@7¾
Hay-Iruden...9½@9¾
Hovesshoe brand, Wrought...9½@9¾
Samson...7@7½
Trenton, Wrought...8½@8¾

Imported—

Armstrong's Mouse Hole...8¼@8½
Peter Wright's...9½@9¾

Anvil, Vise and Drill—

Millers Falls Co., \$18.00...20%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Hull & Hoyt Co.:
Lots of 1 doz...25%
bmal or Lots...26%
Lots of 3 doz...30%

Augers and Bits—

Com. Double Spur...70&100@
Boring Machine Augers...60&100@70&100
Car Bits, 12-in. twist...60&100@70&100
Jennings' Pattern:
Auger Bits...50&100&50%
Ford's Auger and Car Bits...40%
Forster Pat. Auger Bits...40%
C. E. Jennings & Co.:
No. 10 ext. tip, R. Jennings' list...40%
No. 30, R. Jennings' list...50%
Russell Jennings...25&100&25%
L'Hommedieu Car Bits 15&100&15%
Pugh's Black...30%
Pugh's Jennings' Pattern...35%
Snell's Auger Bits...50%
Snell's Bell Hangers' Bits...50%
Snell's Car Bits, 12-in. twist...60%
Wright's Jennings Bits (R. Jennings' list)...50%

Bit Stock Drills—

Standard list...65&65&5%

Expansive Bits—

Clark's small, \$1½; large, \$2½...50&100%
Lavigne's Bits' Pattern, No. 1...50%
doz., \$30; No. 2, \$15...50&100%
C. E. Jennings & Co., Steer's Pat...30%
Swan's...60%

Gimlet Bits—

Common Double Cut, gro. \$2.00@2.75
German Pattern...\$3.35@4.50
Double Cut, makers' lists...50&50&100%

Hollow Augers—

Bonney Pattern, per doz. \$11.00@11.50
Ames...25&100%
New Patent...25&100%
Universal...20%

Ship Augers and Bits—

Ford's...40%
Snell's...40%
C. E. Jennings & Co.:
L'Hommedieu's...15&100%
Watrous'...40%

Awl Hafts, See Hafts, Awl.

Awls—

Brad Awls:
Handled...gro. \$2.75@3.10
Unhandled, Shouldered...gro. \$3.65@4.00
Unhandled, Patent...gro. \$6.00@7.00
Peg Awls:
Unhandled, Patent...gro. \$1.00@1.50
Unhandled, Shouldered...gro. \$1.50@2.00
Scratch Awls:
Handled, Common...gro. \$3.50@4.00
Handled, Socket...gro. \$11.50@13.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First Quality, best brands...\$6.25@6.50
First Quality, other brands...\$5.00@5.25
Jobbers' Special Brands:
Good Quality...\$5.00@5.50
Best Quality...\$6.25

Cheap, Handled Axes...\$5.50@5.75
Beveled, add 25c doz.

Axle Grease—See Grease, Axle.

Axles—Iron or Steel.

Concord, Loose Collar...5½c
Concord, Solid Collar...5 c
No. 1 Common...3@3¼c
No. 1½ Com. New Style...3¼@4 c
No. 2, Solid Collar...3¼@3¾c
Nos. 7, 8, 11 to 14...75&100%
Nos. 15 to 18...60&100&100%
Nos. 19 to 23...80%

Boxes, Axle—

Common and Concord, not turned...15. 5c
Common and Concord, turned...15. 7c
Half Patent...15. 9c

Balances—Sash—

Caldwell new list...50%
Pulman's...60%

Spring—

Spring Balances...5&10@50&100&5%
Chatillon's Light Sp. Balances...40&100%
Chatillon Straight Balances...40%
Chatillon Circular Balances...50%
Chatillon's Large Dial...30%
Poulsen...50%

Barb Wire—See Wire, Barb.

Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb...3@3¼c

Beams, Scale—

Scale Beams, List Jan. 12, '95...30&100%
Chatillon's No. 1...30%
Chatillon's No. 2...40%

Beaters—Egg—

Standard Co.:
No. 5 Steel Handle Dover...\$6.50
No. 10 Cast Handle Dover...\$5.00
No. 10 Steel Handle Dover...\$5.00
No. 15 Extra Heavy Steel Handle...\$15.00

Rival, per gro...\$10.00
Taplin Mfg. Co.:
No. 50 Small Family size...\$5.50
No. 100 Regular Family size...\$5.00
No. 102 Regular Family size Handed...\$9.50

No. 150 Large Family size...\$15.00
No. 152 Large Family size, tinned...\$17.00

Lyon's, Standard size...\$7.00
Woods (S. S. & Co.)...\$7.50

Bellows—

Blacksmith, Standard list...70&70&100%
C. E. Jennings & Co., Blacksmith...60&100%
C. E. Jennings & Co., Hand...33½%

Blacksmiths—

Inch...30 33 35 38 40
Each...\$3.50 3.75 4.25 4.80 5.35 6.15
Extra Length:
Each...\$4.00 4.55 5.10 5.60 6.40 7.50

Molders—

Inch...9 10 11 12 14 15
Doz...\$6.75 7.25 8.50 9.50 12.00 14.50

Hand—

Inch...6 7 8 9 10 12
Doz...\$3.75 4.25 4.50 5.00 5.7 6.75

Bells—Cow—

Ordinary goods...75&5@75&100%
High grade...70&70&100%
Jersey...75&100%
Texas Star...60&100%

Door—

Abbe's Gong...45%
Barton Gong...55%
Home, R. & E. Mfg. Co.'s...55&100%
Lever and Pull, Sargent's...20&100&100%

Hand—

Hand Bells, Polished...60&80&100%
White Metal...55&55&100%
Nickel Plated...50&50&100%
Swiss...60%
Silver Chime...35&35&100%

Miscellaneous—

Farm Bells...10. 2@2¼c
Steel Alloy Church and School...60&100&50%

Wilmet & Hobbs Mfg. Co., Gongs...70%

Belt—Rubber—

Agricultural (Low Grade)...75&100&80%
Common Standard...75&75&100%
Standard...70&70&100%
Extra...60&100&55%

Boston Belting Co.:
Seamless Stitched, Imperial...45%
Boston...50&50%
Niagara...60&55%

Leather—

Extra Heavy, Short Lap...50&100&60%

Regular Short Lap 60&100@60&100&5%
Standard...60&100&100@70&5%
Light Standard...70&70&100%

Cotton—

Rosendale-Rodaway B. & H. Co.:
Sphinx Brand...80&100%
Durable Brand...70%

Bench Stops—See Stops, Bench

Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters...20%
Stoddard's Lightning Tire Upsetters...40&50%

Bicycle Goods—

John S. Long's Son's 1899 list:
Chain...50%
Parts...50%
Spokes...50%
Tub...60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—Tackle—

Common Wooden...70&70&100%
Cleveland Steel...50&100&60&100%
Ford's Star Brand Self Lubricating...60&100%
Hollow Steel, Ford's Pat. Star Brand...50&100%
Lane's Patent Automatic Lock and Junior...30%
Stowell's Novelty, Mal. Iron...50%
See also Machines, Hoisting.

Beards, Stove—

Zinc, Crystal, &c...50&100%

Boils—

Common, list Jan. 30, '95...70@. 2
Norway Iron, \$3.00, list Oct. 7, '94...75&75&100%

Phila. Eagle, \$3.00 list May 24, '99...80&80&100%

Bolt Ends, list Jan. 30, '95...70&100@. 2

Machine, list Oct. 1, '99...70&100@. 2
Machine with C. P. C. & T. Nuts...70%

Note—The rapid advances in manufacturers' prices enable the jobbers to cut prices freely.

Door and Shutter—

Cast Iron Barrel, Round Brass Knob:
Inch...3 4 5 6 8
Per doz...\$0.33 .36 .45 .51 .80

Cast Iron Spring Foot:
Inch...6 8 10
Per doz...\$1.00 1.35 1.75

Cast Iron Chain, Flat, Japanned:
Inch...6 8 10
Per doz...\$0.85 1.30 1.50

Cast Iron Shutter, Brass Knobs:
Inch...6 8 10
Per doz...\$0.60 .90 1.15

Wrought Barrel Brass Knob:
Inch...3 4 5 6 8
Per doz...\$0.45 .50 .61 .70 1.23

Wrought Barrel...70&100@75&5%
Wrought "Bronzed...40&50&50&100%
Wrought Flush, B. K...50&100@60&100%
Wrought Shutter...50&100@60&5%
Wrought Square Neck...50&50&100%
Wrought Sunk...50&50&100%
Ives' Patent Door...60%

Stove and Plow—

Plow...60&100@. 2
Stove...77½%

Tire—

Common...77½%
American Sew Company...70%
Norway Phila., list Oct. 16, '94...75%
Eagle Phila., list Oct. 16, '94...85%
Bay State, list Dec. 28, '99...77½%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '94...75%
Eagle Phila., list Oct. 16, '94...85%
Eclipse, list Dec. 28, '99...77½%
Port Chester Bolt & Nut Company
Empire, list Dec. 28, '99...77½%
Keystone Phila., list Oct. '94...85%
Norway Phila., list Oct. '94...75%

Borers, Tap—

Borers Tap, Ring, with Handle:
Inch...1¼ 1½ 1¾ 2
Per doz...\$3.50 4.50 5.00 6.50

Inch...¾ 1 1½ 2
Per Doz...\$7.50 10.25 12.25 15.00

Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.05; No. 3, \$2.50 each...25&30%

Boring Machines—See Machines, Boring.

Boxes Mitre—

C. E. Jennings & Co...40%
Seavey's, per doz, \$30...40%

Braces—

Note—Most Braces are sold at net prices.

Common Ball, American...\$1.15@1.35

Barber's...50&100&100&100%
Fray's Genuine Spotted...40%
Fray's No. 70 to 120, 81 to 125, 207 to 414...60%
C. E. Jennings & Co...50&100%
P. S. & W. Co., Peck's Patent 50&100&60%

Brackets—

Wrought Steel...70&100@75&5%
Bradley's Wire Shelf:
Full cases...80%
Broken cases...75&100%
Griffin's Pressed Steel...75&100%
Griffin's Folding Brackets...70&100%

Bright Wire Goods—See Wire and Wire Goods.

Broilers—

Wire Goods Co...75%

Buckets, Well and Fire—See Pails

Bucks, Saw—

Hoosier...per gro. \$30.00

Bull Rings—See Rings, Bull.

Butts—Brass—

Wrought list Sept., '96...40@40&5%
Cast Brass, Tiebout's...50%

Cast Iron—

Fast Joint, Broad...60&50&100%
Fast Joint, Narrow...50&50&100%
Note—Jobbers often sell the following at 70&5%:

Loose Joint...70&70&5%
Loose Pin...70&70&5%
Mayer's Hinges...70&70&5%
Parliament Butts...70&70&5%
Wrought Steel—

Loose Joint...70&70&5%
Table and Back Flaps...75&75&5%
Narrow and Broad...75&75&5%
Inside Blind...75&75&5%
Loose Pin, Ball and...75&75&5%
Loose Pin, Ball and...75&75&5%
Steeple Tip
Bronzed Wrt. Nar. and Inside Blind Butts...60&100@50&100&5%

Cages, Bird—

Handy, Brass:
9000, 5000, 1100 series...55%
1200 series...50%
200, 300, 600 and 900 series...40&100%
Handy, Bronze:
700, 800 series...40&100%
Handy, Enameled...40&100%

Calipers—See Compasses.

Calks, Toe and Heel—

Blunt, 1 prong...per lb. ¾@1c
Sharp, 1 prong...per lb. ¾@1c
Perkins' Blunt...per lb. ¾@1c
Perkins' Sharp...per lb. ¾@1c

Can Openers—See Openers, Can

Cans, Milk—

Illinois Pattern, \$1.75 2.10 2.35 each.
Iowa Pattern...2.40 2.60 each.
Buffalo Pattern...2.40 2.50 each.
New York Pattern...2.00 40 qts.
Baltimore Pattern...2.50 2.85 3.40 each.

Cans, Oil—

Buffalo Family Oil Cans:
5 8 10 gal.
\$4.00 6.00 10.00

Caps—Percussion—

Eley's E. B...50%
G. D...per M 50&3¼c
F. L...per M 57&40c
G. H...per M 47&50c
Musket...per M 57&60c

Primers—

Berdan Primers...\$1.00...5%
B. L. Caps (Sturtevant Shells)...\$1.00...5%
All other primers...\$1.10@1.15

Carpet Stretchers—

See Stretchers, Carpet.

Cartridges—

B. B. Caps, Con., Ball Sngd.	.....\$1.00
B. B. Caps, Round Ball.	.....\$1.10@1.18
Blank Cartridges:	
22 C. F., \$5.50.	.....10¢55
22 C. F., \$7.00.	.....10¢55
22 cal. Rim., \$1.50.	.....10¢55
22 cal. Rim., \$2.75.	.....10¢55
Central Fire.	.....25¢
Pistol and Rifle.	.....15¢55
Primed Shells and Bullets.	.....15¢55
Rim Fire Sporting.	.....50¢
Rim Fire, Military.	.....15¢55

Casters—

Bed.	.....70¢70¢10¢
Plate.	.....75¢75¢10¢
Philadelphia.	.....75¢75¢10¢
Boss.	.....70¢10¢
Boss Anti-Friction.	.....70¢10¢
Martin's Patent (Phoenix).	.....40¢
Payson's Anti-Friction.	.....70¢10¢10¢
Standard Ball Bearing.	.....40¢
Tucker's Patent, low list.	.....30¢

Cattle Leaders—

See Leaders, Cattle.

Chain—

American Coil, Less than Casks:	
3-16 1/4 5-16 3/4 7-16 1/2 9-16	
7-30 5-10 4-10 3-55 3-10 3-25	
1/4 3/4 1/2 to 1 1/4 inch.	
3-25 3-20 3-20 cents per lb.	
Cask lots deduct 5¢ per 100 lbs.	
German Coil, list July 24, '97, 80¢ to 10¢10¢	
German Halker Chain, list July 24, '97.	
Traces, Western Standard: 100 pair	
6-1/2-8-2, Straight, with ring.	.....\$26.00
6-1/2-8-2, Straight, with ring.	.....\$27.00
6-1/2-8-2, Straight, with ring.	.....\$31.00
6-1/2-10-2, Straight, with ring.	.....\$34.50
Add 2¢ per pair for Hooks.	
Traces, Trace 3¢ per pair Higher than	
Straight Link.	

Trace, Wagon and Fancy Chains.	
Eastern list.	.....60¢@80¢55
Jack Chain, list July 10, '98:	
Iron.	.....60¢@80¢10¢
Brass.	.....60¢@80¢10¢
Safety Chain.	.....70¢@70¢10¢
Gal. Pump Chain.	.....lb 1/4¢@1/4¢
Covert Sad. Works:	
Breast, Hitching and Rein Chains.	.....50¢
Covert Mfg. Co.:	
Breast.	.....35¢25¢
Halter.	.....35¢25¢
Reel.	.....35¢25¢
Rein.	.....35¢25¢
Stallion.	.....35¢25¢
Onedra Community.	.....60¢@80¢55
Eureka Coll and Halter.	.....60¢@80¢55
Niagara Coll and Halter.	.....60¢@80¢55
Niagara Cow Ties.	.....45¢55¢@10¢55
Am. Coll and Halters.	.....50¢10¢55¢@80¢
Am. Cow Ties.	.....35¢55¢@40¢55

Wire Goods Co.:	
Dog Chain.	.....60¢@10¢
Universal Dbl-Jointed Chain.	.....50¢
Chalk—(From Jobbers.)	
Carpenters', Blue.	.....gro. 15¢
Carpenters', Red.	.....gro. 40¢
Carpenters', White.	.....gro. 50¢
See also Crayons.	
Chalk Lines—See Lines.	

Checks, Door—

Bales'.	.....60¢10¢
Columbia.	.....60¢10¢
Eclipse.	.....60¢@80¢10¢

Chests, Tool—

American Tool Chest Co.:	
Boys' Chests, with Tools.	.....55¢
Youths' Chests, with Tools.	.....40¢
Gentlemen's Chests, with Tools.	.....30¢
Farmers', Carpenters', etc., Chests,	
with Tools.	.....20¢
Machinists and Pipe Fitters' Chests,	
Empty.	.....50¢
C. E. Jennings & Co.'s Machinists' Tool	
Chests.	.....20¢

Chisels—

Socket Framing and Firmer	
Standard List.	.....70¢55¢@75¢55¢
Buck Bros.	.....30¢
Charles Buok.	.....30¢
C. E. Jennings & Co. Socket Firmer	
No. 10.	.....10¢10¢
C. E. Jennings & Co. Socket Framing	
No. 15.	.....80¢10¢
Swan's.	.....70¢55¢
L. & I. J. White.	.....90¢80¢55¢

Tanged—

Tanged Firmers.40¢55¢@40¢10¢
Buck Bros.	.....30¢
Charles Buok.	.....30¢
C. E. Jennings & Co. No. 19, 19 1/2,	
L. & I. J. White, Tanged.	.....25¢55¢

Cold—

Cold Chisels, good quality, lb. 14¢10¢
Cold Chisels, fair quality.	.....lb. 12¢
Cold Chisels, ordinary.	.....lb. 8¢9¢

Chucks—

Beach Pat. each \$8.00.	.....20¢
Massey's Planer and Milling.	.....15¢20¢
Rinker Patent Lathe Chucks.	.....40¢
Combination Lathe Chucks.	.....20¢
Drill Chucks, Patent and Standard.	.....20¢
Independent Lathe Chucks.	.....40¢
Improved Planer Chucks.	.....40¢
Universal Lathe Chucks.	.....40¢
Face Plate Lathe Chucks.	.....55¢
Standard Tool Co.	.....40¢
Improved Drill Chuck.	.....45¢
Union Mfg. Co.:	
Combination.	.....40¢
Carr Drill.	.....30¢
Geared Scroll.	.....30¢
Independent.	.....40¢
Union Drill.	.....30¢
Universal.	.....40¢
Face Plate Jaws.	.....35¢

Clamps—

Adjustable, Hammers.	.....20¢@20¢55¢
Cabinet, Sargent's.	.....50¢10¢
Carriage Makers', P. S. & W. Co.	.....40¢10¢
Carriage Makers' Sargent's.	.....50¢10¢
Bevil, Parallel.	.....35¢10¢
Lineman's, Utica Drop Forge & Tool	
Co.	.....40¢
Saw Clamps, see Plans, Sine Mfg.	

Cleaners Walk—

Star Socket, All Steel.	.....\$4.00 net
Star Shank, All Steel.	.....\$3.75 net
W. & C. Sauer, All Steel, 7 1/2 in.	.....\$3.35; 8 in., \$3.40; 8 1/2 in., \$3.50.

Cleavers, Butchers'—

Foster Bros.	.....20¢
New Haven Edge Tool Co.	.....40¢10¢
Fayette R. Plumb, 33 1/2 in.	.....\$3.45@3.55
P. S. & W.	.....\$3.45@3.55
L. & I. J. White.	.....35¢

Clippers—

Chicago Flexible Shaft Company:	
Handy Toilet.	.....\$7.30
Masotte Toilet.	.....\$3.40
Monitor Toilet.	.....\$9.00
Stewart's Patent.	.....\$10.00

Clips Axle—

Eagle and Superior 1/4 and 5-16	
inch.	.....70¢10¢
Norway, 1/4 and 5-16 inch.	.....70¢10¢

Cloth and Netting, Wire

—See Wire, &c.

Cocks, Brass—

Hardware List (Globe, Kerosene,	
Racking, &c.)	.....55¢10¢

Coffee Mills—See Mills, Coffee.**Collars Dog—**

Brass, Pope & Stevens' list.	.....40¢
Embossed, Gilt, Pope & Stevens' list.	.....50¢10¢
Leather, Pope & Stevens' list.	.....40¢

Compasses Dividers, &c.

Ordinary Goods.	.....70¢10¢75¢
Bemis & Call Hdwr. & Tool Co.:	
Dividers.	.....55¢
Callipers, Call's Patent Inside.	.....55¢
Callipers, Double.	.....55¢
Callipers, Inside or Outside.	.....55¢
Callipers, Wing.	.....55¢
Compasses.50¢
J. Stevens & A. T. Co.25¢10¢

Compressors Corn Shock

J. B. Hughes' # dos.\$3.00
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Conductor Pipe, Galva-

nized—	
L. C. L. to Dealers:	
Territory.Noted.
Eastern.70¢75¢
Central.70¢75¢
Southern.	.....70¢75¢
S. Western.	.....70¢75¢

See also Eave Troughs.

Jobsbers receive extra 12 1/2¢ to 25¢ on car-	
loads loose, and extra 12 1/2¢ on car-	
loads crated.	

Coolers, Water—

Nos.	.....3 4 6 8
Labrador \$11.50 \$14.00 \$17.50 \$30.00	
3 gal.	.....\$25.00
Nos.	.....3 4 6 8
Iceland.\$23.00 \$25.00 \$30.00 \$37.50
10 14 val.\$57.00 \$72.00

Coopers' Tools—

See Tools, Coopers'.	
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Cord—

Braided, Drab.lb. 25¢
Braided, White, Common, 10 1/2 in.lb. 15¢
Cable Laid Italian, lb. A, 18¢; B, 16¢	
Common India.	.....lb. 9¢
Cotton Sash Cord, Twisted.	.....12¢10¢
Patent Russia.	.....lb. 19¢@15¢
Cable Laid Russia.	.....lb. 18¢@15¢
India Hemp, Braided.	.....lb. 11¢@15¢
India Hemp.	.....lb. 10¢10¢
Patent India.	.....lb. 10¢10¢
Pearl Braided, cotton.	.....\$ 17¢18¢
Massachusetts, White.	.....\$ 22¢4¢
Massachusetts, D. ab.	.....\$ 26¢4¢
Eddystone Braided Cotton.	.....\$ 18¢
Harmony Cable Laid Italian.	.....\$ 15¢
Oswann Mills:	
Braided, Solid Braided White.	.....\$ 18¢
Braided, Giant, White.	.....\$ 17¢
Peerless:	
Cable Laid Italian.	.....16¢
Cable Laid Russian.	.....14¢
Cable Laid India.	.....12¢
Braided India.	.....18¢
Phoenix, White.	.....19¢

Hamson:

Braided, Drab Cotton.	.....\$ 32¢4¢
Braided, Italian Hemp.	.....\$ 32¢4¢
Braided, White.	.....\$ 40¢
Braided, Linen Cotton, Spot.	.....\$ 28¢4¢
Silver Lake:	
A quality, Drab, 40¢.	.....15¢
A quality, White, 35¢.	.....15¢
B quality, Drab, 35¢.	.....15¢
B quality, White, 30¢.	.....15¢
Italian Hemp, 40¢.	.....15¢
Linen, 37¢.	.....15¢

Wire, Picture—

Braided or Twisted.	.....\$5¢@8¢10¢
Note.—There is a good deal of confusion	
in lists, some using old list and others the	
new list.	

Corn Knives and Cutters

—See Knives, Corn.	
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Corn Planters—

See Planters, Corn.	
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Crackers, Nut—

Little Giant.\$ gr. \$24.00
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Cradles—

Grain.50¢
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Crayons—

White Round Crayons, gross, 5 1/2¢@6¢	
Cases, 100 gro., \$5.00, at factory.	
D. M. Stewart Mfg. Co.	
Metal Workers' Crayons, gr. 25.50	
Soapstone Pencils, round, flat	
or square.	.....\$1.50
Rolling Mill Crayons.	.....\$ gr. \$3.50
Railroad Crayons, compo.	
attention) gr. \$2.00	

See also Chalk.

Creamery Pails—See Pails,	
Creamery.	

Crooks, Shepherds'—

Fort Madison, Heavy.	.....\$ doz. \$7.00
Fort Madison, Light.\$ doz. \$5.50

Crow Bars—See Bars, Crow.**Cultivators—**

Victor Garden.\$ doz. \$10.00
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Cutlery Table—

"Gross Goods," list Jan., '01, net in	
Extra 10% to purchasers of \$50 worth in	
3 months.35¢10¢

Cutters—Glass—

Smith & Heminway Co.50¢
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Meat—

Hale's, Nos. 11 & 11 1/2 12 1/2 13 & 13 1/2	
Per doz.\$10.80 13.80 18.00
American.90¢
Nos.1 2 3 4 5 6
Connors.	.....\$5 \$7 \$10 \$25 \$50 \$60
Nos.	.....0 1 8 10 19
Each.	.....\$1.75 2.25 3.00 4.00 5.50
Enterprise.	.....25¢25¢7 1/2
Nos.	.....5 10 12 22 32
Each.	.....\$2 \$3 \$2.50 \$4 \$6
Dixon's, # doz.	.....33¢40¢
Nos.	.....3 4 5
Home No. 1, # doz.	.....\$22.75 50¢10¢
Little Giant, # doz.	.....35¢35¢25¢
Nos.	.....310 312 310 323
Each.	.....\$15.00 \$43.00 \$44.00 \$71.00 \$68.00
Sterling.	.....33¢45¢
Nos.	.....1 2
Each.	.....\$1.00 \$2.50
Miles' Challenge, # doz.	.....45¢45¢10¢
Nos.	.....32.00 33.00 40.00
New Triumph No. 605, # doz.	.....\$34.00
Woodruff's, # doz.	.....40¢
Nos.	.....100 150
Each.	.....\$15.00 \$18.00
Chadborn's Smoked Beef Cutter, # doz.	.....40¢
Enterprise Beef Shavers.	.....25¢30¢

Saw and Kraut—

Henry Daston & Sons:	
Slaw, Corn Grater, &c.	.....40¢
Kraut Cutters 24 x 7, 26 x 8, 30 x 9, 35 x	
Kraut Cutters 36 x 12, 40 x 12.	.....40¢
Tucker & Dorsey Mfg. Co.:	
Kraut Cutters.	.....40¢
Slaw Cutters, 1 Knife, # gr.	.....\$15¢@36¢
Slaw Cutters, 2 Knife, # gr.	.....\$32¢@36¢

Tobacco—

All Iron, Cheap.	.....\$1.25@1.50
Enterprise.	.....25¢30¢
National, # doz.	.....\$21.00
Sargent's, # doz.	.....\$24.00

Washer—

Appleton's, # doz.	.....50¢10¢10¢
Bonney's.	.....\$ doz. \$4.75

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger, per doz.	.....\$10.00
Iwan's Improved Post Hole Auger.	.....40¢
Iwan's Perfection Post Hole Digger.	.....40¢

Kohler's Universal.

Kohler's Little Giant.\$ doz. \$14.00
Kohler's Hercules.	.....\$ doz. \$15.00
Kohler's Invincible.	.....\$ doz. \$12.00
Kohler's Pioneer.	.....\$ doz. \$10.00
Kohler's Plow.	.....\$ doz. \$8.00
Never-Break Post Hole Diggers, # doz.	.....\$24.00
Samson, # doz.	.....\$34.00

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Checks—**

See Checks, Door.

Door Springs—

See Springs, Door.

Drawers, Money—

Tucker's Pat. Alarm Till No. 1, # doz.	.....\$18.00
No. 2, #15 No. 3, #14; No. 4, #18.	

Drawing Knives—

See Knives, Drawing.

Drills and Drill Stocks—

Common Blacksmiths' Drill, each	.....\$1.50@1.75
Blacksmiths' Self-feeding, each	.....\$3.75@4.00
Breast, Millers Falls, each \$3.00.	.....15¢10¢
Breast, P. S. & W.	.....20¢30¢10¢
Goodell Automatic Drills.	.....40¢50

Wire, Brown & Sharpe's.....255
Wire, Morse's.....254
Wire P. S. & W. Co.....10&10&54
Gimlets—
Nail, Metal, Assorted, gro. \$1.10@1.75
Nail, Metal, Assorted, gro. \$3.00@3.50
Nail, Wood Handled, Assorted,
gro. \$1.00@1.25
Nail, Wood Handled, Assorted,
gro. \$5.00@5.25

Glass, American Window
Jobbers' List, Sept. 1, 1900.
Small lots from store:
Single and Double Strength, all
sizes.....35¢@55¢
10% to be added on all first quality,
both Single and Double.

Glue—Liquid, Fish—
List A, Bottles or Cans, with Brush.
37¢@50¢
List B, Cans (1/4 pils., pils., qts.).....
35¢@1.84
List C, Cans (1/4 gal., gal.).....25¢@1.55

Glue Pots—See Pots, Glue.
Grease, Axle—
Common Grade.....gro. \$5.00@6.00
Dixon's Everlasting.....10-m pils., ea. 85¢
Dixon's Everlasting, in bxs. 1/2 doz. 1 lb.
\$1.20; 3 lb. \$2.00

Grindstone Fixtures—
See Fixtures, Grindstone.
Guards, Snow—
Cleveland Wire Spring Co.:
Galv. Steel 1000.....\$2.00
Copper 1000.....\$2.00

Gun Powder—See Powder.
Hack Saws—See Saws.
Hafts, Axl—
Peg Patent, Leather Top.....\$1.30@1.55
Peg Patent, Plain Top.....\$3.50@3.75
Sewing, Brass Ferrule.....\$1.50@1.60
Saddlers', Brass Ferrule.....\$1.55@1.65
Peg, Common.....\$1.25@1.35
Brad, Common.....\$1.50@1.75

Halters and Ties—
Covert Mfg. Co., Web.....45¢@25¢
Covert Mfg. Co., Jute Rope.....45¢@25¢
Covert Mfg. Co., Sisal Rope.....30¢@25¢
Covert's Saddlery Works, 90 list, Web.....
60¢@10¢
Covert's Saddlery Works, Jute.....60¢@10¢
Covert's Saddlery Works, Sisal.....60¢
Covert's Saddlery Works, Manila.....60¢
Covert's Saddlery Works, Cotton.....70¢

Hammers—
Handled Hammers—
Heller's Machinists'.....50¢@50¢
Heller's Farmers'.....50¢@50¢
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,
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Handled Hammers—
Heller's Machinists'.....50¢@50¢
Heller's Farmers'.....50¢@50¢
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,
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Handled Hammers—
Heller's Machinists'.....50¢@50¢
Heller's Farmers'.....50¢@50¢
Magnetic Tack, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10,
11, 12, 13, 14, 15, 16, 17, 18, 19, 20,
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149, 150, 151, 152, 153, 154, 155, 156,
157, 158, 159, 160, 161, 162, 163, 164,
165, 166, 167, 168, 169, 170, 171, 172,
173, 174, 175, 176, 177, 178, 179, 180,
181, 182, 183, 184, 185, 186, 187, 188,
189, 190, 191, 192, 193, 194, 195, 196,
197, 198, 199, 200, 201, 202, 203, 204,
205, 206, 207,

Ladies—Melting—

L. & G. Mfg. Co. 60%
P. S. & W. 40@40.10%
Reading 50&10%
Sargent's 40@40.10%

Lanterns—Tubular—

Regular Tubular doz. \$1.50@5.00
Side Lift Tubular doz. \$1.75@5.25
Square Lift Tubular doz. \$1.75@5.25
Other Styles 40@10@10.50%

Bull's Eye Police—

No. 1, 2 3/4 inch \$3.60
No. 2, 3 inch \$4.00

Latches, Thumb—

Roggin's Latches doz. \$2@3.50

Lawn Mowers—

See Mowers, Lawn.

Leaders, Cattle—

Small doz. 50c; large, 85c
Covert Mfg. Co. 45&25

Lemon Squeezers—

See Squeezers, Lemon.

Lifters, Transom—

Solid Grip, Payson Mfg. Co. 80%
R. & E. 45%

Lines—

Wire Clothes, Nos. 18 19 20
100 feet \$2.20 2.00 1.66
75 feet \$1.80 1.70 1.30

Ossawa Mills.
Crown Solid Braided Chalk 33&45

Mason's, No. 0 to No. 5 33&45

Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3 40%

Silver Lake Braided Chalk, No. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

Locks—

Cabinet—
Cabinet Locks 33&45@53&75

Door Locks, Latches, &c.—
[Net prices are very often made on these goods.]

Reading Hardware Co. 40%
R. & E. Mfg. Co. 50%
Sargent & Co. 40@40.10%
Snow's Victor 50&10%

Elevator—

Stowell's 83&45

Padlocks—

Wrought Iron 75&10@80%
R. & E. Mfg. Co. Wrt. Steel and Brass 30%

Sash, &c.—

Fitch's Bronze and Brass 66&45
Fitch's Iron 70%
Ives' Patent 55&5@55%
Payson's signal 80%
Reading 60&10&10@70%

Machines—

Boring—
Without Augers.
Upright. Angular.

Improved No. 2 \$4.25 No. 1 \$5.00
Improved No. 4 8.75 No. 2 8.38
Improved No. 5 2.75
Jennings 2.50 3.00
Millers' Fall 8.75
Snell's Rice's Pat. 2.50 2.75
Swan's, No. 600 5.10 No. 900 6.45

Holisting—

Moore's Anti-Friction Differential Pulley Block 30%
Moore's Hand Hoist, with Lock Brake 30%

Ice Cutting—

Chandler's 15%

Washing—

Wayne American doz. \$28.00
Western Star, No. 2, 3 doz. 28.00
Western Star, No. 3, 4 doz. 30.00
St. Louis, No. 41, 42 doz. 30.00

Maillets—

Hickory 45&5@50&55%
Lignumvitae 45&5@50&55%
Timbers', Hickory and Applewood, doz. 60@55c

Mats—Door—

Elastic Steel (W. G. Co.) 10%

Mattocks—

See Picks and Mattocks.

Meat Cutters—

See Cutters, Meat.

Milk Cans—See Cans, Milk**Mills—Coffee—**

Enterprise Mfg. Co. 25@30%
National, list Jan. 1, '04 30%
Parker's Columbia and Victor 40&10@40%
Parker's Box and Slide 50&70@60%
Swift, Lane Bros. 30%

Mincing Knives—

See Knives, Mincing.

Molasses Cates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Net prices are generally quoted.

Cheap all sizes, \$1.80@2.10
Good all sizes, \$2.50@3.75

10 12 14 16-inch
High Grade 4.25 4.50 4.75 5.00
Pennsylvania and Continental 6.00&10.50
Quaker City 7.00&5%
Great American 7.00&5%
Philadelphia:
Style M. S. C. K. T. 7.00&5%
Style A. All Steel 8.00&10%
Style E, Low Wheel 8.00&10%

Style E, High Wheel 7.00&10.50%
Drexel and Gold Coin, low list 50&5%

Nails—

Cut and Wire. See Trade Report.

Wire Nail and Brads, Papered.
List July 20, 1899 85&5@85&10

Hungarian, Finishing, Upholsterers', &c. See Tacks

Horse—

Nos. 6 7 8 9 10
A. C. 25&23&22&21&20 40&55%
Ausable 28&26&25&24&23&22&21&20 50&10%
Capewell 19&18&17&16&15 10&5%
C. R. K. 25&23&22&21&20 40%
Champion 28&26&25&24&23 40&5&25%
Clinto 19&17&16&15&14 30&10&5%
Maud S. 25&23&22&21&20 50%
Neponset 23&21&20&19&18 40%
Putnam 23&21&20&19&18 33&4%
Vulcan 23&21&20&19&18 25&10%
American, Nos. 1 to 10 9@9&5%

Picture
1 1/4 3 3/4 5 5 1/2 in.
Brass Head, 1/2 3/4 5/8 7/8 1.00 gro.
For Head, 1.10 1.10 1.10 gro.

Nippers, See Pliers and Nippers.

Nut Crackers—

See Crackers, Nut.

Nuts—

List Feb. 1, '99.
Cold Punched Off
Mfrs. or U. S. Standard, list.

Hexagon, plain 5.60@5.80c
Square, plain 5.20@5.40c
Square, C. T. & R. 5.40@5.60c
Hexagon, C. T. & R. 6.10@6.30c

Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stand'd.
Square Blank or Tapped 5.60@5.80c
Hexagon Blank or Tapped 6.30@6.50c

Oakum—
Best or Government lb. 64c
Navy lb. 5 c
U. S. Navy lb. 64c
Plumbers' Spun Navy 24c
In carload lots 1/4 lb. off f.o.b. New York.

Oil, Axle—
Snow Flake:
1 pt. cans, per doz. \$3.00
1 qt. cans, per doz. \$4.80
1 gal. cans, per doz. \$15.00
5 gal. cans, per doz. \$66.00

Oil Tanks—See Tanks, Oil.

Oilers—

Brass and Copper 40&10@50%
Tin or Steel 60&10@65%
Zinc 60&10@65%

Malleable, Hammers' Improved, No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422,

Shovels and Tongs—

Brass Head 60¢@80¢10¢
 Iron Head 60¢@80¢10¢

Sieves and Sifters—

Hunter's Imitation, gro. \$10.00@10.50
 Buffalo Metallic Blue, S. S. & Co., 14x16 18x18 18x20
 \$12.90 \$15.80 \$10.00
 Eclipse 10¢
 Electric Light 10¢
 Hunter's Genuine 10¢
 Shaker (Barber's Pat.) Flour Sifters 10¢
 1/2 doz., \$3.00

Sieves, Tin Rim—

Per dozen
 Inch 1 16 18 20
 Black, full size \$0.95 1.00 1.10 1.20
 Flated, full size \$1.05 1.10 1.20 1.30
 Black, scant \$0.75 .80 .85

Sieves, Wooden Rim—

Nested, 10, 11 and 12 Inch
 Mesh 18, Nested, doz. \$0.75@0.80
 Mesh 20, Nested, doz.85@.90
 Mesh 24, Nested, doz. 1.00@1.05

Sinks—**Cast Iron—**

Standard list 60¢@60¢10¢
 NOTE.—There is not entire uniformity in lists used by jobbers.

Wrought Steel—

Columbus Galv'd and Enameld 60¢@50¢
 Columbia, Painted 45¢
 L. & G. Mfg. Co., Galvanized 50¢
 L. & G. Mfg. Co., Enameld 50¢

Skins, Wagon—

Cast Iron 70¢@10¢75¢
 Malleable Iron 10¢@10¢50¢
 Steel 10¢@10¢10¢

Slates—

"D" Slates 10¢@10¢10¢
 Unexcelled Noiseless Slates 10¢
 60¢10¢10¢10¢10¢10¢10¢10¢
 Wire Bound 35¢@40¢50¢
 Double Slates, add \$1 case, net.

Slaw Cutters—See Cutters.**Slicers, Vegetable—**

Sterling \$2.00 33¢@45¢

Snaps, Harness—

German 10¢@10¢10¢
 Covert Mfg. Co.:
 Derby 35¢@45¢
 High Grade 45¢@55¢
 Jockey 45¢@55¢
 Trojan 45¢@55¢
 Yankee 35¢@45¢
 Yankee, Roller 30¢@40¢
 Covert's Saddlery Works:
 Banner 60¢@10¢
 Crown 60¢@10¢
 Model 60¢@10¢
 Triumph 60¢@10¢
 W. & E. T. Fitch Co.:
 Bristol 40¢@10¢
 Empire 50¢@55¢
 German 40¢
 National 50¢@55¢
 Perfect 50¢@55¢
 Clipper 50¢@55¢
 Champion 40¢
 Security 40¢
 Victor 60¢@55¢
 Onida Community:
 Solid Steel 65¢@65¢10¢
 Solid Steel 65¢@65¢10¢10¢
 Sargent's Patent Guarded 65¢@10¢

Snaths—

Beythe 45¢@55¢

Snips, Tinner's—See Shears**Soldering Irons—**

See Irons, Soldering.

Spoke Trimmers—

See Trimmers, Spoke.

Spoons and Forks—

Silver Plated—

Flat Ware 50¢@10¢60¢10¢10¢

Miscellaneous—

German Silver 60¢@10¢60¢10¢10¢

Springs—

Door—

Gem (Coll) 30¢
 Star (Coll) 30¢
 Torrey's Rod, 39 in. 1/2 doz. \$1.10@1.25
 Victor (Coll) 50¢@10¢10¢

Carriage, Wagon, &c.

Factory Shipments.

1 1/2 in and wider Blk. Hf. Bt. Bt. 1/4 1/4 1/4 1/4
 Cliff's Bolster Springs 35¢
 Cliff's Seat Springs 1/2 pair 55¢

Prinklers, Lawn—

Enterprise 25¢@30¢
 Philadelphia No. 1 1/2 doz. \$12; No. 2, \$15; No. 3, \$24.

Squares—

Nickel plated List Jan. 5, 1900
 Steel and Iron 70¢@75¢
 Rosewood Hd. Try Square and T-Bevels 60¢@10¢10¢70¢
 Iron Hd. Try Squares and T-Bevels 10¢@10¢10¢10¢

Denton's Try Sq. and T-Bevels 60¢@10¢
 Winterbottom's Try and Miter 50¢@10¢

Squeezers—

Lemon—

Wood, Common, gro. No. o. \$5.25
 \$5.80; No. 1, \$9.25@9.50.
 Wood, Porcelain Lined—

Cheap doz. \$3.00@9.75

Good Grade doz. \$5.00@5.50
 Tinned Iron doz. \$0.75@1.15
 Iron, Porcelain Lined doz. \$3.90@5.15
 Jennings' Star 1/2 doz. \$1.85@1.90
 King 1/2 doz. \$2.00

Staples—

Barbed Blind lb. 7¢@14¢
 Electricians', Association list 10¢@10¢10¢
 Fence Staples, same price as Barbed Wire. See Trade Report.
 Poultry Netting, Staples per lb. 5¢@7¢
 Grand Crossing Tack Co.'s list 8¢@10¢

Steels, Butchers—

Dick's 40¢
 Foster Bros' 40¢
 C. & A. Hoffmann's 40¢

Steelyards—

See \$25¢10¢

Stocks and Dies—

Blacksmiths' 40¢@10¢10¢
 Gardner Die Stocks No. 1 50¢
 Gardner Die Stocks, larger sizes 40¢
 Green River 25¢
 Lightning Screw Plate 25¢
 Little Giant 25¢
 Reeco's New Screw Plates 25¢@30¢
 Curtis Reversible Ratchet Die Stock 35¢

Stone—**Soythe Stones—**

Chicago Wheel & Mfg. Co.:
 Gem Corundum, 10 inch, \$10.00 per gro., 12 inch, \$13.00
 Cleveland Stone Co., list Nov., '99, \$3.95
 Pike Mfg. Co., list '95-'96 \$3.95

Oil Stones, &c.

Chicago Wheel & Mfg. Co.:
 Corundum Oil, Double Grit 30¢
 Corundum Oil, Single Grit 25¢
 Pike Mfg. Co.:
 Hindle No. 1, 1/2 doz. 8¢
 Sand Stone, 1/2 doz. 33¢@39¢
 Turkey Oil Stone, Extra, 5 to 8 in. 80¢
 Turkey Slips 1.50

Lily White Washita 60¢
 Rosy Red Washita 60¢
 Washita Stone, Extra 50¢
 Washita Stone, No. 2 40¢
 Lily White Slips 90¢
 Rosy Red Slips 90¢
 Washita Slips, Extra 80¢
 Washita Slips, No. 1 70¢
 Arkansas Stone, No. 1, 1/2 doz. \$2.35
 Arkansas Stone, No. 1, 1/2 doz. \$2.35
 India Oil Stones 25¢
 Tanite Mills:
 Emery Oil, 1/2 doz. \$5.00 50¢@60¢

Stoners—**Cherry—**

Enterprise 25¢@30¢

Stops, Bench—

Millers Falls 15¢@10¢
 Morrill's 1/2 doz. No. 1, \$10.00; No. 2, \$11.00, 40¢@20¢

Stops, Window—

Ives' Patent 25¢@25¢
 Wilcox, Steel, per doz. \$5.00 50¢

Stove Boards—

See Boards, Stove.

Stove Polish—See Polish, Stove.**Strainers Pump—**

Diamond Joe Pump Strainers, per doz. 75¢

Straps, Box—

Cary's Universal, case lots 30¢@10¢

Stretchers, Carpet—

Cast Iron, Steel Points doz. 55¢@55¢
 Socket doz. \$1.75

Strops, Razor—

Smith & Hemenway & Co. 70¢

Stuffers, Sausage—

Miles' Challenge, 1/2 doz. \$20 50¢@50¢55¢
 Enterprise Mfg. Co. 25¢@27¢45¢
 National Specialty Mfg. Co., list Jan. 1, '97 30¢

Tacks Brads, &c.—

List Jan. 15, '99.

Carpet Tacks, American 90¢@10¢
 American Cut Tacks 90¢@10¢
 Sweden Iron Tacks 90¢@10¢
 Sweden Upholsterers' Tacks 90¢@10¢
 Gimp Tacks 90¢@10¢
 Lace Tacks 90¢@10¢
 Trimmers' Tacks 90¢@10¢
 Looking Glass Tacks 70¢@10¢
 Bill Posters' and Railroad Tack 90¢@10¢
 Hungarian Nails 80¢@10¢
 Common and Patent Brads, 70¢@10¢
 Trunk and Clout Nails 80¢@10¢

NOTE.—The above prices are for straight weights. An extra 5% is given Star Weights and an extra 10% on Standard Weights.

Miscellaneous—

Double Point Tacks 90¢@6 or 7 tens

Steel Wire Brads, E. & E. Mfg. Co.'s list 60¢@10¢60¢

Tanks, Oil—

Emerald, S. S. & Co. 80-gal. \$3.90
 Emerald, S. S. & Co. 80-gal. \$4.00
 Queen City S. S. & Co. 80-gal. \$3.50
 Queen City S. S. & Co. 80-gal. \$4.25

Tapes, Measuring—

American Asker's Skin 50¢@10¢50¢
 Patent Leather 25¢@25¢
 Steel 10¢@10¢55¢

Chesterman's 25¢@25¢
 Eddy's Steel 40¢@40¢50¢
 Eddy's Metallic 33¢@33¢25¢
 Keuffel & Esser Co., Steel and Metallic
 Lower list, 1899 35¢
 Lufkin's Steel 33¢@35¢
 Lufkin's Metallic 30¢@30¢25¢

Thermometers—

Tin Case 80¢@30¢10¢

Ties, Bale—Steel.

Standard Wire 50¢@10¢55¢

Ties, Wall—

Cleveland Wire Spring Co.:
 Galv. St. el 6 3/2 x 6 1/2 in. 1000, \$10.00
 Galv. Steel 5-3/2 x 8 1/2 in. 1000, \$11.00
 Galv. Steel 5-3/2 x 11 1/2 in. 1000, \$12.00
 Galv. Steel 5-3/2 x 15 1/2 in. 1000, \$14.00

Tinner's Shears, &c.—

See Shears, Tinner's, &c.

Tinware—

Stamped, Japanned and Placed, sold very generally at net prices.

Tire Benders, Upsetters, &c.—See Benders and Upsetters, Tire.**Tobacco Cutters—**

See Cutters, Tobacco.

Tools—

Coopers' 20¢@20¢55¢

Saw—

Atkins' new list 40¢
 Simonds' Improved 33¢@45¢
 Simonds' Crescent 25¢

Ship—

L. & J. White 25¢

Transom Lifters—

See Lifters, Transom.

Traps—Game—

Oneida Pattern 75¢@75¢10¢55¢
 Newhouse 45¢@50¢
 Hawley & Norton 65¢@50¢70¢
 Victor (Oneida Pattern) 75¢@75¢10¢
 Star (Blake Pattern) 65¢@10¢70¢55¢

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8¢@9¢

Mouse, Round or Square Wire doz. \$0.85@1.00

American Pattern French Rat and Mouse Traps—

No. 1, Detroit Marty Pattern, 1/2 doz. \$4.50; in 1/2 gro. lots, 1/2 doz. \$4.00
 No. 2, Detroit Marty Pattern, 1/2 doz. \$4.25; in 1/2 gro. lots, 1/2 doz. \$3.50
 Detroit Marty Pattern Mouse, 1/2 doz. \$2.00; in 1/2 gro. lots, 1/2 doz. \$1.75
 Diamond Joe Mouse Traps, per doz. 60¢
 Diamond Joe Rat Traps, per doz. \$1.00
 Marty French Rat and Mouse Traps (Genuine):
 No. 1, Rat, Each \$1.12 1/2; 1/2 doz. \$12.00
 No. 3, Rat, 1/2 doz. \$6.00; case of 50 \$3.25 doz.
 No. 3 1/2, Rat, 1/2 doz. \$4.75; case of 72 \$4.25 doz.
 No. 4, Mouse, 1/2 doz. \$3.50; case of 72 \$2.75 doz.
 No. 5, Mouse, 1/2 doz. \$2.75; case of 72 \$2.25

Schuyler's Rat Killer, No. 1, 1/2 gr. \$30.00; No. 2, 1/2 gr. \$30.00; Mouse, No. 3, \$18.00 50¢

Fly—

Balloon, Globe or Acme doz. \$1.15@1.25; gro. \$10.50@11.00

Harper, Champion or Paragon doz. \$1.25@1.40; gro. \$12.00@12.50

Trimmers, Spoke—

Bonney's No. 1 and 2 40¢

Trowels—

Diston Brick and Pointing 30¢
 Diston Plastering 25¢
 Diston "Standard Brand" and Ga- 40¢
 Never-Break Steel Garden Trowels 70¢
 Peace's Plastering 80¢
 Rose Brick and Plastering 25¢
 Woodrough & McParlin, Plastering 25¢

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list 40¢
 Daisley Stove Trucks, improved pattern 1/2 doz. \$21.00
 Model Stove Trucks 1/2 doz. \$18.50

Tubs, Wash—

No. 1 2 3
 Galvanized, per doz. \$5.00 5.50 6.00
 Galvanized Wash tubs (S. S. & Co.):
 No. 1 2 3 10 20 30
 Per doz \$5 25 3.00 6.75 6.50 7.25 8.00

Twine—

Small lots f. o. b. New York, Philadelphia or Boston.
 White Sisal, 500 ft. to lb. per lb. 8¢@
 Standard, 500 ft. to lb. per lb. 8¢@
 Manila, 500 ft. to lb. per lb. 10¢@

Pure Manila, 500 ft. to lb. per lb. 11¢@
 For carloads deduct 1/4¢ per lb.

Miscellaneous—

Flax Twine—

No. 9, 1/4 and 1/2-lb. Balls 20¢ 21¢
 No. 12, 1/4 and 1/2-lb. Balls 18¢ 21¢
 No. 18, 1/4 and 1/2-lb. Balls 16¢ 19¢
 No. 24, 1/4 and 1/2-lb. Balls 15¢ 18¢
 No. 36, 1/4 and 1/2-lb. Balls 14¢ 18¢
 Chalk Line, Cotton, 1/4-lb. Balls 20¢@21¢
 Cotton Mops, 4, 9, 12 and 15 lb. to doz 7¢@8¢
 Cotton Wrapping, 5 Balls to lb 10¢@11¢
 American 2-Ply Hemp, 1/4 and 1/2-lb. Balls 12¢@13¢
 American 3-Ply Hemp, 1-lb. Balls 12¢@13¢
 India 2-Ply Hemp, 1/4 and 1/2-lb. Balls (Spring Twine) 9¢
 India 3-Ply Hemp, 1-lb. Balls 9¢

India 3-Ply Hemp, 1 1/2-lb. Balls 9¢
 2, 3, 4 and 5-Ply Jute, 1/2-lb. Balls 10¢@10¢
 Mason Line, Linen, 1/2-lb. Balls 45¢
 No. 10, Mattress, 1/4 and 1/2-lb. Balls 50¢
 Wool 70¢

Vises—

Solid Box 60¢
 Bonney's Saw Vises 40¢@10¢

Parallel—

Athol Machine Co.:
 Simpson's Adjustable 40¢
 Standard 40¢
 Amateur 25¢
 Bonney's 40¢@10¢
 Fisher & Norris Double Screw 15¢@10¢
 Hollands' 40¢
 Machinists' 40¢
 Key-tone 70¢
 Lewis Tool Co. 20¢@10¢
 Massey's Perfect 15¢@20¢
 Massey's:
 Clincher 80¢@40¢
 Combination, Quick Adj. 40¢
 Woodworker's 15¢@20¢
 Merrill's 20¢
 Miller's Falls low list 10¢
 Parker's:
 Victor 20¢@25¢
 Regulars 20¢@25¢
 Vulcan's 40¢@45¢
 Combination Pipe 55¢@60¢
 Prentiss 20¢@25¢
 Sargent's 40¢
 Simpson's Adjustable 40¢
 Sneliker's X. L. 20¢@25¢
 Stephens' 20¢@25¢
 Van, W. & W. Hd. Co. 40¢

Saw Filers—

Bonney's No. 1, \$13; No. 3, \$16. 50¢@10¢
 Diston's D 3 Clamp and Guide, 1/2 d 25¢
 Reading 40¢@10¢
 Wentworth's Rubber Jaw, Nos. 1, 2 and 3 30¢@10¢

Miscellaneous—

Signal & Keeler Combination Pipe Vise 60¢

Parker's Combination Pipe:

87 Series 60¢
 187 Series 60¢@55¢
 No. 870 40¢

Wads—Price Per M.

B. E., 11 up 60¢
 B. E., 9 and 10 70¢
 B. E., 8 80¢
 B. E., 7 80¢
 P. E., 11 up \$1.00
 P. E., 9 and 10 1.25
 P. E., 8 1.50
 P. E., 7 1.50
 Ely's B. E., 11 and larger \$1.70@1.75
 Ely's P. E., 12 to 20 \$3.00@3.25

Wagon Jacks—

See Jacks, Wagon.

Ware, Hollow—

Aluminum—

S. S. & Co. Reduced List 40¢

Cast Iron, Hollow—

Stove Hollow Ware:

Ground 65¢
 Unground 70¢
 White Enameld Ware:
 Maslin Kettles 75¢@10¢50¢
 Covered Ware:
 Tinned and Turned 10¢@60¢
 Enameld and Plain, 50¢@60¢10¢55¢
 See also Pots, Glus.

Enameld—

Washers—

Leather, Axle—

Solid.....80¢ 10¢ 10¢ 85¢
Patent.....85¢ 10¢ 10¢ 85¢
Coil: 1/4 1 1 1/4 1 1/2 1 3/4
110 1 1/2 1 3/4 1 5/8 per 100

Iron or Steel—

Size bolt...5-16 3/8 1/2 5/8 3/4
Washers.....\$5.00 4.70 5.00 5.20 5.00
In lots less than one keg add 14c per
lb., 5-lb. boxes add 1/2c to list.

Cast Washers—

Over 1/2 inch, barrel lots, per lb.....
1 1/4¢ 1 1/2¢

Washer Cutters—

See Cutters, Washer.

Washing Machines—

See Machines, Washing.

Water Coolers—

See Coolers, Water.

Wedges—

Oil Finish.....lb. 3 1/4¢

Weights, Sash—

Per ton.....\$20.00 @ \$2.50
Western Foundries make price
\$10 @ \$1 lower.

Well Buckets, Galvanized
See Pails, Galvanized.

Wheels Well—

8-in. \$1.65 @ 1.75; 10-in. \$2.00 @ 2.10;
12-in. \$2.50 @ 2.75; 14-in. \$3.25 @ 3.40

Wire and Wire Goods—

Brt. and Ann., 6 to 9.....70¢ @ 10¢
Brt. and Ann., 10 to 18.....72 1/2¢ @ 85¢
Brt. and Ann., 19 to 28.....75¢ @ 7 1/2¢
Brt. and Ann., 27 to 35.....75¢ @ 10 1/2¢
Cop'd and Galv., 6 to 9.....60 1/2¢ @ 65¢
Cop'd and Galv., 10 to 15.....70¢ @ 75¢
Cop'd and Galv., 19 to 28.....70¢ @ 10¢
Cop'd and Galv., 27 to 35.....72 1/2¢ @ 85¢
Tinned, 6 to 15.....70¢ @ 10 1/2¢
Tinned, 15 to 18.....70¢ @ 10 1/2¢
Tinned, 19 to 28.....70¢ @ 10 1/2¢
Tinned, 27 to 35.....65¢ @ 10 1/2¢
Annealed Wire on Spools.....70¢ @ 70¢
Brass and Copper Wire on Spools.....
60¢ @ 50¢ @ 10¢
Brass, list Feb. 26, '98.....35¢

Copper, list Feb. 26, '98.....15¢
Cast Steel Wire.....50¢
Stub's Steel Wire.....\$3.00 to \$5.40¢
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Iron and Brass, list July 1, 1899.....
85¢ @ 5¢

Wire Cloth and Netting—

Galvanized Wire Netting, 30 @ 27 @ 35¢
Painted Screen Cloth per 100 ft. \$1.00
Light Hardware Grade:

2-3 Mesh, Plain (Sc. list) sq. ft. 1 1/4¢
2-3 Mesh, Galv. (Sc. list) sq. ft. 2 1/4¢

Wire Barb—See Trade Report.

Wire, Rope—See Rope, Wire.

Wrenches—

Agricultural.....70¢ @ 10 1/2¢ @ 5¢
Case lots.....75¢ @ 10 1/2¢
Acme.....80¢ @ 10 1/2¢
Bull's S.....80¢ @ 10 1/2¢
Bull's S.....70¢
Coe's Genuine.....40¢ @ 10 1/2¢ @ 5¢
Coe's "Mechanics".....40¢ @ 10 1/2¢ @ 5¢
Alligator.....60¢ @ 10 1/2¢
Bemis & Cull's.....85¢ @ 5¢
Adjustable S.....

Adjustable S Pico.....40¢
Brigg's Pattern.....30¢ @ 10 1/2¢
Combination Black.....40¢ @ 5¢
Combination Bright.....4 1/2¢
Cylinder o-Gas Pipe.....55¢
Extra Heavy.....45¢
Merrick's Pattern.....50¢
No. 3 Pipe, Bright.....55¢
Bridley Automatic.....80¢
Boardman's.....35¢ @ 10 1/2¢
Donohue's Engineer.....50¢ @ 10 1/2¢
Eagle.....80¢
Gem Pocket.....80¢
Hercules.....70¢
Knife Handle, Machinists' (W. & B.)
Case lots.....50¢ @ 10 1/2¢
Less than case lots.....50¢ @ 5¢
Improved Pipe (W. & B.).....50¢ @ 10 1/2¢
Solid Handles, P. S. & W.....50¢ @ 10 1/2¢
Stevenson.....60¢ @ 10 1/2¢

Wrought Goods—

Staples, Hooks, etc., list March 17
'98.....85¢ @ 10 1/2¢ @ 35¢

Yokes, Neck—

Covered Saddle Works, Trimmed 1.60 @ 5¢
Covered Saddle Works, Neck Yoke
Centers.....70¢

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers & Freighters.....
list net

Zinc—

Sheet.....lb. 6 1/4¢ @ 7¢

PAINTS, OILS AND COLORS.—Wholesale Prices.

White Lead, Zinc, &c.

Lead, Foreign white, in Oil.....7 1/4¢ @ 9 1/4¢
Lead, American White, in Oil:
Lots of 500 lb or over.....@ 6 1/4¢
Lots less than 500 lb.....@ 7¢
Lead, White, in oil, 25 lb tin
pails, add to keg price.....@ 1 1/2¢
Lead, White, in oil, 12 1/2 lb tin
pails, add to keg price.....@ 1¢
Lead, White, in oil, 1 to 5 lb as
sorted time, add to keg price.....@ 1 1/4¢
Lead White, Dry in bbls.....5 1/4¢ @ 6¢
Lead, American, Terms: On lots of 500
lbs. and over, 60 days, or 2% for cash if
paid in 15 days from date of invoice.
Zinc, American, dry.....@ 4 1/2¢ @ 4 3/4¢
Zinc, Paris, Red Seal, dry.....@ 5¢
Zinc, Paris, Green Seal, dry.....@ 9 1/2¢
Zinc, Antwerp, Red Seal, dry.....@ 6 1/2¢
Zinc, Antwerp, Green Seal, dry.....@ 7 1/4¢
Zinc, V. M. French, in Poppy Oil,
Green Seal:
Lots of 1 ton and over.....12¢ @ 12 1/4¢
Lots of less than 1 ton.....12 1/4¢ @ 12 1/2¢
Zinc, V. M. French, in Poppy Oil,
Red Seal:
Lots of 1 ton and over.....10 1/2¢ @ 11 1/4¢
Lots of less than 1 ton.....11¢ @ 11 1/2¢
Discounts.—V. M. French Zinc.—Dis-
counts to buyers of 10 bbls. lots of one or
assorted grades, 1%: 25 bbls. 2%; 50
bbls. 4%.

Dry Colors.

Black, Carbon.....@ 8¢ @ 20¢
Black, Drop, Amer.....@ 4¢ @ 7¢
Black, Drop, Eng.....@ 7¢ @ 11¢
Black, Ivory.....12¢ @ 21¢
Lamp, Com.....4 1/4¢ @ 6¢
Blue, Celestial.....@ 4¢ @ 6¢
Blue, Chinese.....80¢ @ 35¢
Blue, Prussian.....33¢ @ 34¢
Blue, Ultramarine.....4¢ @ 20¢
Brown, Spanish.....1¢ @ 1¢
Brown, Vandyke, Amer.....1 1/4¢ @ 2 1/4¢
Brown, Vandyke, Foreign.....2 1/4¢ @ 3 1/4¢
Carmine, No. 40.....@ 2.05 @ 2.75¢
Green, Chrome, ordinary.....6¢ @ 6 1/4¢

Green, Chrome, pure.....18¢ @ 23¢
Lead, Red, bbls. 1/2 bbls. and kegs:
Lots 500 lb or over.....@ 6¢
Lots less than 500 lb.....@ 6 1/2¢
Litharge, bbls. 1/2 bbls. and kegs:
Lots 500 lb or over.....@ 6¢
Lots less than 500 lb.....@ 6 1/2¢
Ocher, French Washed.....1 1/4¢ @ 2 1/2¢
Ocher, Dutch Washed.....4 1/2¢ @ 5¢
Ocher, American.....@ 10.00 @ 15.00¢
Orange Mineral, English.....@ 8¢ @ 11 1/4¢
Orange Mineral, French.....11 3/4¢ @ 11 1/2¢
Orange Mineral, German.....8 1/2¢ @ 9 1/4¢
Orange Mineral, American.....@ 8¢ @ 8 1/4¢
Red, Indian, English.....4 1/2¢ @ 5¢
Red, Indian, American.....8¢ @ 3 1/4¢
Red, Turkey, English.....4¢ @ 6¢
Red, Tuscan, English.....7¢ @ 10¢
Red, Venetian, Amer. #100 lb.....80¢ @ 75¢
Red Venetian, English #100 lb.....1.80 @ 3.00¢
Sienna, Italian, Burnt and
Powdered.....@ 3 1/4¢ @ 7 1/4¢
Sienna, Ital., Raw, Powd.....@ 3¢ @ 7 1/2¢
Sienna, American, Raw.....1 1/4¢ @ 2¢
Sienna, American, Burnt and
Powdered.....@ 1 1/4¢ @ 2¢
Talc, French.....@ 100 lb \$1.35 @ 1.50¢
Talc, American......90¢ @ 1.10¢
Terra Alba, French, #100 lb......95¢ @ 1.10¢
Terra Alba, English......95¢ @ 1.00¢
Terra Alba, American No. 1......85¢ @ .90¢
Terra Alba, American No. 2......45¢ @ .50¢
Umber, Turkey, Raw & Powd.....2 1/2¢ @ 3 1/4¢
Umber, But. Amer.....1 1/4¢ @ 2¢
Umber, Raw, Amer.....1 1/4¢ @ 2¢
Yellow, Chrome.....10 1/2¢ @ 25¢
Vermilion, American Lead.....10¢ @ 40¢
Vermilion, Quicksilver, bulk.....@ 72¢
Vermilion, Quicksilver, bags.....@ 73¢
Vermilion, English, Import.....80¢ @ 95¢
Vermilion, Chinese.....\$1.00 @ 1.20¢

Colors in Oil.

Black, Lampblack.....12¢ @ 14¢
Blue, Chinese.....36¢ @ 40¢
Blue, Prussian.....32¢ @ 38¢
Blue, Ultramarine.....13¢ @ 16¢

Brown, Vandyke.....9 1/4¢ @ 13¢
Green, Chrome.....10¢ @ 12¢
Green, Paris.....@ 31¢
Sienna, Raw.....10¢ @ 13¢
Sienna, Burnt.....10¢ @ 13¢
Umber, Raw.....9 1/4¢ @ 13¢
Umber, Burnt.....9 1/4¢ @ 13¢

Miscellaneous.

Barytes, Foreign, #1 ton.....\$19.00 @ 21.00¢
Barytes, Amer. Hoated.....19.00 @ 20.00¢
Barytes, Crude.....9.00 @ 10.00¢
Chalk, in bulk.....#1 ton 2.00 @ 3.00¢
Chalk, in bbls.....#100 lb @ 35¢
China Clay, English, #1 ton 12.00 @ 17.50¢
Cobalt, Oxide.....#100 lb 2.25 @ 2.50¢
Whiting, Common, #100 lb......40¢ @ .60¢
Whiting, Gliders......45¢ @ .65¢
Whiting, extra Gliders......55¢ @ .65¢

Putty.

In bulk.....\$1.60
In bladders.....2.25¢
In cans, 12 lb to 25 lb.....3.2¢
In cans, 1 lb to 5 lb.....3.25¢

Spirits Turpentine.

In Southern bbls.....@ 37¢
In machine bbls.....@ 37 1/2¢

Glue.

Low Grade.....@ 11¢ @ 14¢
Cabinet.....13 1/4¢ @ 16 1/4¢
Medium White.....14 1/4¢ @ 16 1/4¢
Extra White.....18¢ @ 23¢
French.....12¢ @ 40¢
Irish.....13 1/4¢ @ 16¢

Animal, Fish and Vegetable Oils.

Linseed, City, raw.....# gal. 61¢ @ 62¢

Linseed, City, boiled.....63¢ @ 64¢
Linseed, Sate and West'n, raw 58¢ @ 60¢
Linseed, raw Calcutta see 1.....@ 55¢
Lard, Prime.....66¢ @ 67¢
Lard, Extra No. 1.....50¢ @ 52¢
Lard, No. 1.....41¢ @ 43¢
Cotton-seed, Crude.....30¢ @ 30 1/2¢
Cotton-seed, Summer Yellow,
prime.....35¢ @ 36¢
Cotton-seed Summer Yellow,
off grades.....32 1/2¢ @ 34¢
Sperm, Crude.....@ 55¢
Sperm, Natural Spring.....@ 55¢
Sperm, Bleached Spring.....@ 55¢
Sperm, Natural Winter.....61¢ @ 62¢
Sperm, Bleached Winter.....64¢ @ 65¢
Whale, Crude.....@ 55¢
Whale, Natural Winter.....@ 45¢
Whale, Bleached Winter.....@ 47¢
Menhaden, Crude, Sound.....28¢ @ 29¢
Menhaden, Light Strained.....32¢ @ 33¢
Menhaden, Bleached Winter.....35¢ @ 36¢
Menhaden, Ex Bleached Winter 38¢ @ 39¢
Tallow, prime.....52¢ @ 53¢
Coconut, Ceylon.....5 1/4¢ @ 5 1/2¢
Coconut, Ceylon.....5 1/4¢ @ 5 1/2¢
Cod, Domestic.....32¢ @ 34¢
Cod, Newfoundland.....35¢ @ 37¢
Red Elaine.....34¢ @ 35¢
Red Saponified.....@ 45¢ @ 46¢
Olive, Italian, bbls.....80¢ @ 85¢
Neatsfoot, prime.....50¢ @ 53¢
Palm, prime, Lagos.....@ 5 1/4¢ @ 5 1/2¢

Mineral Oils.

Black, 20 gravity, 25 @ 30 cold
test.....# gal. 94¢ @ 104¢
Black, 20 gravity, 15 cold test, 104¢ @ 111¢
Black, summer.....94¢ @ 99¢
Cylinder, light filtered.....145¢ @ 175¢
Cylinder, dark filtered.....115¢ @ 165¢
Paraffine, 908-907 gravity.....124¢ @ 194¢
Paraffine, 903 gravity.....114¢ @ 184¢
Paraffine, 893 gravity.....94¢ @ 110¢
Paraffine, red, No. 1.....124¢ @ 134¢
In small lots 1/2¢ advance.

THE IRON AGE.

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CURRENT METAL PRICES.

MARCH 27, 1901.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL— Bar Iron from Store—

Common Iron: Duty, Round 0.84¢ lb. Square, 0.84¢ lb.	
1 to 1 1/2 in. round and square	1.75@1.85¢
1 1/2 to 4 in. x 3/4 to 1 in.	1.75@1.85¢
Refined Iron:	
1 to 1 1/2 in. round and square	1.80@1.90¢
1 1/2 to 4 in. x 3/4 to 1 in.	1.95@2.00¢
1 to 1 1/2 in. x 3/4 to 1 in.	2.00¢
Rods—1/2 and 11-16 round and square	2.15@2.25¢
Angles:	
3 in x 1/2 in. and larger	2.00¢
3 to 3 1/2 in. x 3/4 in.	2.00¢
1 1/2 to 3 in. x 3/4 in.	2.10¢
1 1/2 to 2 1/2 in. x 3/4 in. and thicker	2.00¢
1 to 1 1/2 in. x 3/4 in.	2.10¢
1 to 1 1/2 in. x 3/4 in.	2.30¢
3/4 x 1/2 in.	2.50¢
3/4 x 1/2 in.	2.55¢
3/4 x 1/2 in.	3.10¢
3/4 x 3/8 in.	4.00¢
Test:	
1 in.	2.50¢
1 1/2 in.	2.30¢
1 1/2 in. and larger	2.20¢
Beams	2.25¢
Channels, 3 in. and larger	2.25¢
Hand—1/2 to 3/4 in. to No. 3	2.20¢
Burden's "Best" Iron, base price	3.15¢
Burden's "H. B. & S. Iron, base price	2.95¢
"Claster"	3.00¢
Norway Bars	3.40¢
Norway Shapes	3.40¢

Merchant Steel from Store—

Bessemer Machinery	1.90 to 1.95¢
Toe Calk, Tire and Sleigh Shoe	2.00@2.50¢
Best Cast Steel, base price in small lots	7/8¢
Best Cast Steel Machinery, base price in small lots	6¢

Soft Steel Sheets—

1/2 inch	2.10¢	No. 14	2.60¢
3/8 inch	2.15¢	No. 16	2.70¢
No. 8	2.25¢	No. 18	3.00¢
No. 10	2.40¢	No. 20	3.40¢
No. 12	2.50¢	No. 22	3.50¢

Sheet Iron from Store. Black.

	One Pass, C. B.	R. G.
No. 14 to 16	3.25¢	3.30¢
No. 18 to 21	3.35¢	3.40¢
No. 22 to 24	3.45¢	3.50¢
No. 25 and 26	3.55¢	3.60¢
No. 27	3.65¢	3.70¢
No. 28	3.75¢	3.80¢

Russia, Planished, &c.

Genuine Russia, according to assortment	10¢
Patent Planished	10¢
Galvanized.	

No. 10 to 16	12¢
No. 17 to 21	13¢
No. 22 to 24	14¢
No. 25 to 26	15¢
No. 27	16¢
No. 28	17¢
No. 29	18¢
No. 30	19¢
36 in. 1¢ lb. higher.	

Foreign Steel from Store—

Best Cast	15¢
Extra Cast	18¢
Swaged Cast	20¢
Best Double Shear	15¢
Blister, 1st quality	18¢
German Steel, Best	10¢
2d quality	9¢
3d quality	8¢
Sheet Cast Steel, 1st quality	15¢
2d quality	14¢
3d quality	12¢
R. Muesel's "Special"	40¢
"Titanic"	40¢
Hobson's Choice X.X. Extra Best	35¢
Jessop Self Hardening	40¢
Seamans "Nelson" Steel	40¢
Hobson's "Boho" Special Self-Hardening	43¢

METALS—

Tin—

Duty—Pigs, Bars and Block. Free.	
Banco, Pigs	2 1/2¢
Strait, Pigs	2 1/2¢
Strait in Bars	2 1/2¢

Tin Plates—

American Charcoal Plates.

Calland Grade:	
IC, 14 x 20	80.75
IX, 14 x 20	8.25
Melyn Grade:	
IC, 14 x 20	6.25
IX, 14 x 20	7.75
Allaway Grade:	
IC, 14 x 20	5.50
IX, 14 x 20	6.60

American Coke Plates—Bessemer—

IC, 14 x 20	109¢
IX, 14 x 20	84.25@84.00
IC, 14 x 20	80.95@81.00
IX, 14 x 20	77.20@77.25

American Terne Plates—

IC, 20 x 28	80.50
IX, 20 x 28	11.35

Tin Boiler Plates, American—

IX, 14 x 20	112 sheets	81.25
IX, 14 x 20	112 sheets	13.50
IX, 14 x 20	112 sheets	15.00

Copper—

Duty—Pig, Bar and Ingot and Old Copper free

Ingot—

Lake	17 1/2¢
Ansonia grade Casting	16 1/2¢

Sheet and Bolt—

January 19, 1900.

Prices, in cents per pound.

Sheet 1/2 x 60.

	Not wider than	Not longer than	And longer than	4 oz. to 5 oz. sheet, 1/2 x 60 and heavier.	5 oz. to 6 oz. sheet, 1/2 x 60.	6 oz. to 7 oz. sheet, 1/2 x 60.	7 oz. to 8 oz. sheet, 1/2 x 60.	8 oz. to 9 oz. sheet, 1/2 x 60.	9 oz. to 10 oz. sheet, 1/2 x 60.	10 oz. to 11 oz. sheet, 1/2 x 60.	11 oz. to 12 oz. sheet, 1/2 x 60.	12 oz. to 13 oz. sheet, 1/2 x 60.	13 oz. to 14 oz. sheet, 1/2 x 60.	14 oz. to 15 oz. sheet, 1/2 x 60.	15 oz. to 16 oz. sheet, 1/2 x 60.	16 oz. to 17 oz. sheet, 1/2 x 60.	17 oz. to 18 oz. sheet, 1/2 x 60.	18 oz. to 19 oz. sheet, 1/2 x 60.	19 oz. to 20 oz. sheet, 1/2 x 60.	20 oz. to 21 oz. sheet, 1/2 x 60.	21 oz. to 22 oz. sheet, 1/2 x 60.	22 oz. to 23 oz. sheet, 1/2 x 60.	23 oz. to 24 oz. sheet, 1/2 x 60.	24 oz. to 25 oz. sheet, 1/2 x 60.	25 oz. to 26 oz. sheet, 1/2 x 60.	26 oz. to 27 oz. sheet, 1/2 x 60.	27 oz. to 28 oz. sheet, 1/2 x 60.	28 oz. to 29 oz. sheet, 1/2 x 60.	29 oz. to 30 oz. sheet, 1/2 x 60.	30 oz. to 31 oz. sheet, 1/2 x 60.	31 oz. to 32 oz. sheet, 1/2 x 60.	32 oz. to 33 oz. sheet, 1/2 x 60.	33 oz. to 34 oz. sheet, 1/2 x 60.	34 oz. to 35 oz. sheet, 1/2 x 60.	35 oz. to 36 oz. sheet, 1/2 x 60.	36 oz. to 37 oz. sheet, 1/2 x 60.	37 oz. to 38 oz. sheet, 1/2 x 60.	38 oz. to 39 oz. sheet, 1/2 x 60.	39 oz. to 40 oz. sheet, 1/2 x 60.	40 oz. to 41 oz. sheet, 1/2 x 60.	41 oz. to 42 oz. sheet, 1/2 x 60.	42 oz. to 43 oz. sheet, 1/2 x 60.	43 oz. to 44 oz. sheet, 1/2 x 60.	44 oz. to 45 oz. sheet, 1/2 x 60.	45 oz. to 46 oz. sheet, 1/2 x 60.	46 oz. to 47 oz. sheet, 1/2 x 60.	47 oz. to 48 oz. sheet, 1/2 x 60.	48 oz. to 49 oz. sheet, 1/2 x 60.	49 oz. to 50 oz. sheet, 1/2 x 60.	50 oz. to 51 oz. sheet, 1/2 x 60.	51 oz. to 52 oz. sheet, 1/2 x 60.	52 oz. to 53 oz. sheet, 1/2 x 60.	53 oz. to 54 oz. sheet, 1/2 x 60.	54 oz. to 55 oz. sheet, 1/2 x 60.	55 oz. to 56 oz. sheet, 1/2 x 60.	56 oz. to 57 oz. sheet, 1/2 x 60.	57 oz. to 58 oz. sheet, 1/2 x 60.	58 oz. to 59 oz. sheet, 1/2 x 60.	59 oz. to 60 oz. sheet, 1/2 x 60.	60 oz. to 61 oz. sheet, 1/2 x 60.	61 oz. to 62 oz. sheet, 1/2 x 60.	62 oz. to 63 oz. sheet, 1/2 x 60.	63 oz. to 64 oz. sheet, 1/2 x 60.	64 oz. to 65 oz. sheet, 1/2 x 60.	65 oz. to 66 oz. sheet, 1/2 x 60.	66 oz. to 67 oz. sheet, 1/2 x 60.	67 oz. to 68 oz. sheet, 1/2 x 60.	68 oz. to 69 oz. sheet, 1/2 x 60.	69 oz. to 70 oz. sheet, 1/2 x 60.	70 oz. to 71 oz. sheet, 1/2 x 60.	71 oz. to 72 oz. sheet, 1/2 x 60.	72 oz. to 73 oz. sheet, 1/2 x 60.	73 oz. to 74 oz. sheet, 1/2 x 60.	74 oz. to 75 oz. sheet, 1/2 x 60.	75 oz. to 76 oz. sheet, 1/2 x 60.	76 oz. to 77 oz. sheet, 1/2 x 60.	77 oz. to 78 oz. sheet, 1/2 x 60.	78 oz. to 79 oz. sheet, 1/2 x 60.	79 oz. to 80 oz. sheet, 1/2 x 60.	80 oz. to 81 oz. sheet, 1/2 x 60.	81 oz. to 82 oz. sheet, 1/2 x 60.	82 oz. to 83 oz. sheet, 1/2 x 60.	83 oz. to 84 oz. sheet, 1/2 x 60.	84 oz. to 85 oz. sheet, 1/2 x 60.	85 oz. to 86 oz. sheet, 1/2 x 60.	86 oz. to 87 oz. sheet, 1/2 x 60.	87 oz. to 88 oz. sheet, 1/2 x 60.	88 oz. to 89 oz. sheet, 1/2 x 60.	89 oz. to 90 oz. sheet, 1/2 x 60.	90 oz. to 91 oz. sheet, 1/2 x 60.	91 oz. to 92 oz. sheet, 1/2 x 60.	92 oz. to 93 oz. sheet, 1/2 x 60.	93 oz. to 94 oz. sheet, 1/2 x 60.	94 oz. to 95 oz. sheet, 1/2 x 60.	95 oz. to 96 oz. sheet, 1/2 x 60.	96 oz. to 97 oz. sheet, 1/2 x 60.	97 oz. to 98 oz. sheet, 1/2 x 60.	98 oz. to 99 oz. sheet, 1/2 x 60.	99 oz. to 100 oz. sheet, 1/2 x 60.	100 oz. to 101 oz. sheet, 1/2 x 60.	101 oz. to 102 oz. sheet, 1/2 x 60.	102 oz. to 103 oz. sheet, 1/2 x 60.	103 oz. to 104 oz. sheet, 1/2 x 60.	104 oz. to 105 oz. sheet, 1/2 x 60.	105 oz. to 106 oz. sheet, 1/2 x 60.	106 oz. to 107 oz. sheet, 1/2 x 60.	107 oz. to 108 oz. sheet, 1/2 x 60.	108 oz. to 109 oz. sheet, 1/2 x 60.	109 oz. to 110 oz. sheet, 1/2 x 60.	110 oz. to 111 oz. sheet, 1/2 x 60.	111 oz. to 112 oz. sheet, 1/2 x 60.	112 oz. to 113 oz. sheet, 1/2 x 60.	113 oz. to 114 oz. sheet, 1/2 x 60.	114 oz. to 115 oz. sheet, 1/2 x 60.	115 oz. to 116 oz. sheet, 1/2 x 60.	116 oz. to 117 oz. sheet, 1/2 x 60.	117 oz. to 118 oz. sheet, 1/2 x 60.	118 oz. to 119 oz. sheet, 1/2 x 60.	119 oz. to 120 oz. sheet, 1/2 x 60.	120 oz. to 121 oz. sheet, 1/2 x 60.	121 oz. to 122 oz. sheet, 1/2 x 60.	122 oz. to 123 oz. sheet, 1/2 x 60.	123 oz. to 124 oz. sheet, 1/2 x 60.	124 oz. to 125 oz. sheet, 1/2 x 60.	125 oz. to 126 oz. sheet, 1/2 x 60.	126 oz. to 127 oz. sheet, 1/2 x 60.	127 oz. to 128 oz. sheet, 1/2 x 60.	128 oz. to 129 oz. sheet, 1/2 x 60.	129 oz. to 130 oz. sheet, 1/2 x 60.	130 oz. to 131 oz. sheet, 1/2 x 60.	131 oz. to 132 oz. sheet, 1/2 x 60.	132 oz. to 133 oz. sheet, 1/2 x 60.	133 oz. to 134 oz. sheet, 1/2 x 60.	134 oz. to 135 oz. sheet, 1/2 x 60.	135 oz. to 136 oz. sheet, 1/2 x 60.	136 oz. to 137 oz. sheet, 1/2 x 60.	137 oz. to 138 oz. sheet, 1/2 x 60.	138 oz. to 139 oz. sheet, 1/2 x 60.	139 oz. to 140 oz. sheet, 1/2 x 60.	140 oz. to 141 oz. sheet, 1/2 x 60.	141 oz. to 142 oz. sheet, 1/2 x 60.	142 oz. to 143 oz. sheet, 1/2 x 60.	143 oz. to 144 oz. sheet, 1/2 x 60.	144 oz. to 145 oz. sheet, 1/2 x 60.	145 oz. to 146 oz. sheet, 1/2 x 60.	146 oz. to 147 oz. sheet, 1/2 x 60.	147 oz. to 148 oz. sheet, 1/2 x 60.	148 oz. to 149 oz. sheet, 1/2 x 60.	149 oz. to 150 oz. sheet, 1/2 x 60.	150 oz. to 151 oz. sheet, 1/2 x 60.	151 oz. to 152 oz. sheet, 1/2 x 60.	152 oz. to 153 oz. sheet, 1/2 x 60.	153 oz. to 154 oz. sheet, 1/2 x 60.	154 oz. to 155 oz. sheet, 1/2 x 60.	155 oz. to 156 oz. sheet, 1/2 x 60.	156 oz. to 157 oz. sheet, 1/2 x 60.	157 oz. to 158 oz. sheet, 1/2 x 60.	158 oz. to 159 oz. sheet, 1/2 x 60.	159 oz. to 160 oz. sheet, 1/2 x 60.	160 oz. to 161 oz. sheet, 1/2 x 60.	161 oz. to 162 oz. sheet, 1/2 x 60.	162 oz. to 163 oz. sheet, 1/2 x 60.	163 oz. to 164 oz. sheet, 1/2 x 60.	164 oz. to 165 oz. sheet, 1/2 x 60.	165 oz. to 166 oz. sheet, 1/2 x 60.	166 oz. to 167 oz. sheet, 1/2 x 60.	167 oz. to 168 oz. sheet, 1/2 x 60.	168 oz. to 169 oz. sheet, 1/2 x 60.	169 oz. to 170 oz. sheet, 1/2 x 60.	170 oz. to 171 oz. sheet, 1/2 x 60.	171 oz. to 172 oz. sheet, 1/2 x 60.	172 oz. to 173 oz. sheet, 1/2 x 60.	173 oz. to 174 oz. sheet, 1/2 x 60.	174 oz. to 175 oz. sheet, 1/2 x 60.	175 oz. to 176 oz. sheet, 1/2 x 60.	176 oz. to 177 oz. sheet, 1/2 x 60.	177 oz. to 178 oz. sheet, 1/2 x 60.	178 oz. to 179 oz. sheet, 1/2 x 60.	179 oz. to 180 oz. sheet, 1/2 x 60.	180 oz. to 181 oz. sheet, 1/2 x 60.	181 oz. to 182 oz. sheet, 1/2 x 60.	182 oz. to 183 oz. sheet, 1/2 x 60.	183 oz. to 184 oz. sheet, 1/2 x 60.	184 oz. to 185 oz. sheet, 1/2 x 60.	185 oz. to 186 oz. sheet, 1/2 x 60.	186 oz. to 187 oz. sheet, 1/2 x 60.	187 oz. to 188 oz. sheet, 1/2 x 60.	188 oz. to 189 oz. sheet, 1/2 x 60.	189 oz. to 190 oz. sheet, 1/2 x 60.	190 oz. to 191 oz. sheet, 1/2 x 60.	191 oz. to 192 oz. sheet, 1/2 x 60.	192 oz. to 193 oz. sheet, 1/2 x 60.	193 oz. to 194 oz. sheet, 1/2 x 60.	194 oz. to 195 oz. sheet, 1/2 x 60.	195 oz. to 196 oz. sheet, 1/2 x 60.	196 oz. to 197 oz. sheet, 1/2 x 60.	197 oz. to 198 oz. sheet, 1/2 x 60.	198 oz. to 199 oz. sheet, 1/2 x 60.	199 oz. to 200 oz. sheet, 1/2 x 60.	200 oz. to 201 oz. sheet, 1/2 x 60.	201 oz. to 202 oz. sheet, 1/2 x 60.	202 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sheet, 1/2 x 60.	258 oz. to 259 oz. sheet, 1/2 x 60.	259 oz. to 260 oz. sheet, 1/2 x 60.	260 oz. to 261 oz. sheet, 1/2 x 60.	261 oz. to 262 oz. sheet, 1/2 x 60.	262 oz. to 263 oz. sheet, 1/2 x 60.	263 oz. to 264 oz. sheet, 1/2 x 60.	264 oz. to 265 oz. sheet, 1/2 x 60.	265 oz. to 266 oz. sheet, 1/2 x 60.	266 oz. to 267 oz. sheet, 1/2 x 60.	267 oz. to 268 oz. sheet, 1/2 x 60.	268 oz. to 269 oz. sheet, 1/2 x 60.	269 oz. to 270 oz. sheet, 1/2 x 60.	270 oz. to 271 oz. sheet, 1/2 x 60.	271 oz. to 272 oz. sheet, 1/2 x 60.	272 oz. to 273 oz. sheet, 1/2 x 60.	273 oz. to 274 oz. sheet, 1/2 x 60.	274 oz. to 275 oz. sheet, 1/2 x 60.	275 oz. to 276 oz. sheet, 1/2 x 60.	276 oz. to 277 oz. sheet, 1/2 x 60.	277 oz. to 278 oz. sheet, 1/2 x 60.	278 oz. to 279 oz. sheet, 1/2 x 60.	279 oz. to 280 oz. sheet, 1/2 x 60.	280 oz. to 281 oz. sheet, 1/2 x 60.	281 oz. to 282 oz. sheet, 1/2 x 60.	282 oz. to 283 oz. sheet, 1/2 x 60.	283 oz. to 284 oz. sheet, 1/2 x 60.	284 oz. to 285 oz. sheet, 1/2 x 60.	285 oz. to 286 oz. sheet, 1/2 x 60.	286 oz. to 287 oz. sheet, 1/2 x 60.	287 oz. to 288 oz. sheet, 1/2 x 60.	288 oz. to 289 oz. sheet, 1/2 x 60.	289 oz. to 290 oz. sheet, 1/2 x 60.	290 oz. to 291 oz. sheet, 1/2 x 60.	291 oz. to 292 oz. sheet, 1/2 x 60.	292 oz. to 293 oz. sheet, 1/2 x 60.	293 oz. to 294 oz. sheet, 1/2 x 60.	294 oz. to 295 oz. sheet, 1/2 x 60.	295 oz. to 296 oz. sheet, 1/2 x 60.	296 oz. to 297 oz. sheet, 1/2 x 60.	297 oz. to
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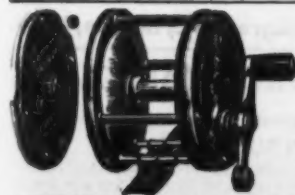
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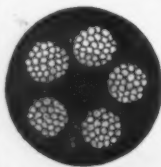
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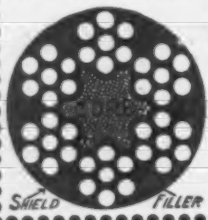
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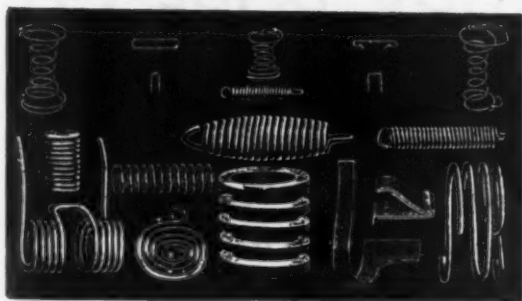
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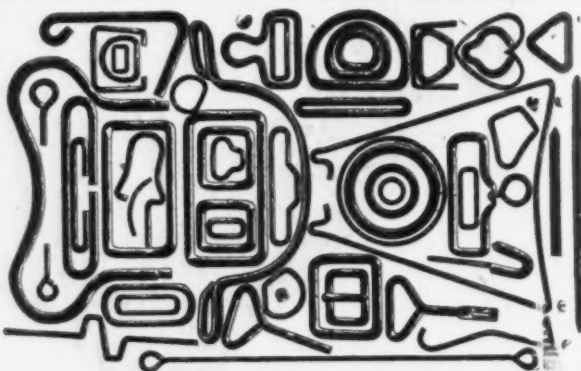
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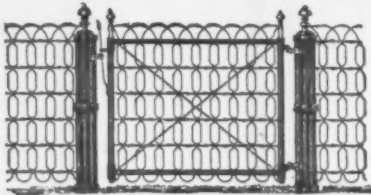
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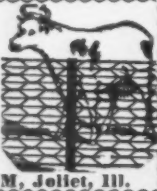
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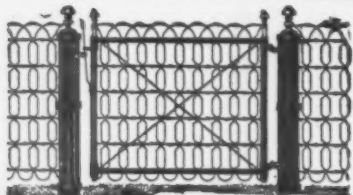
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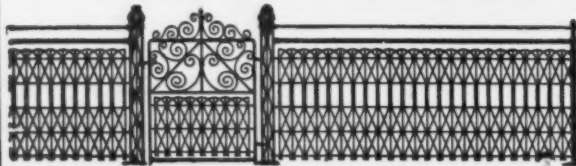
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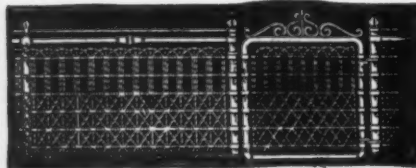
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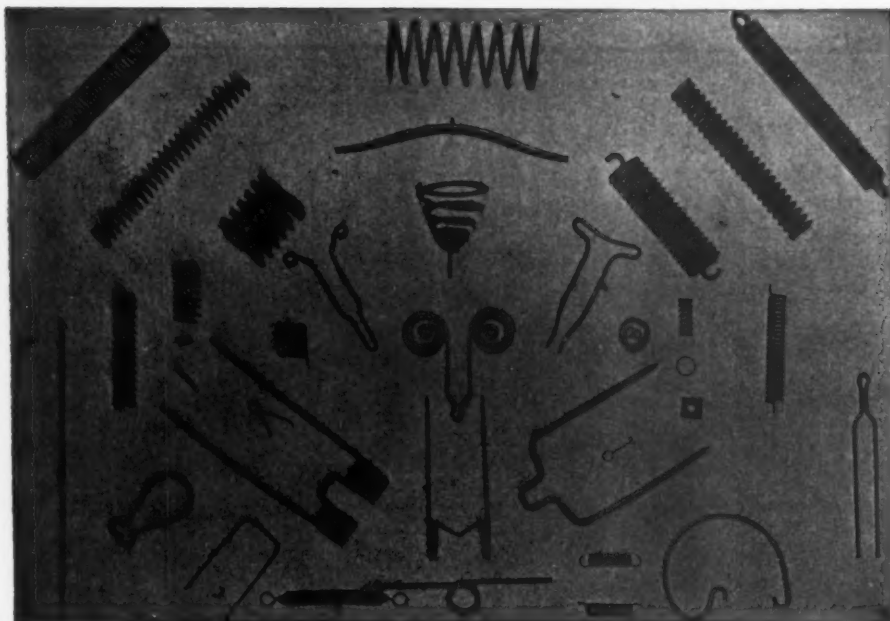
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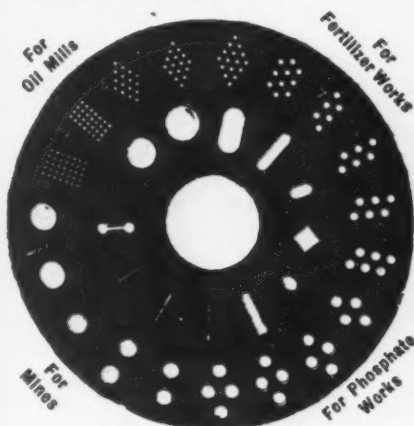
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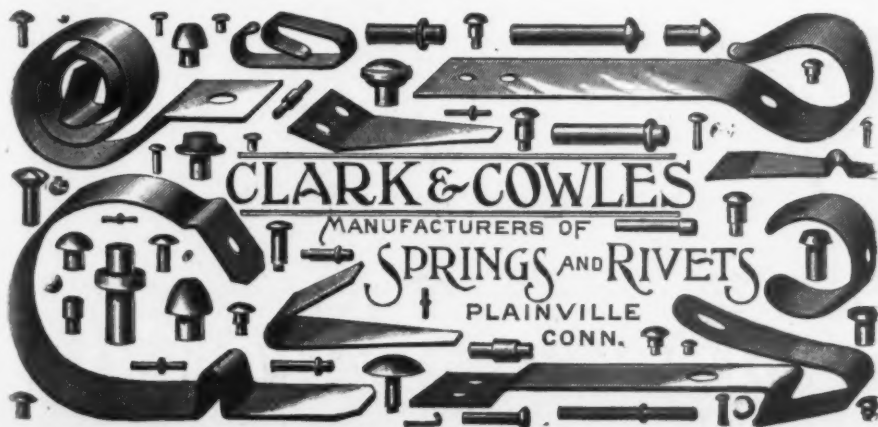
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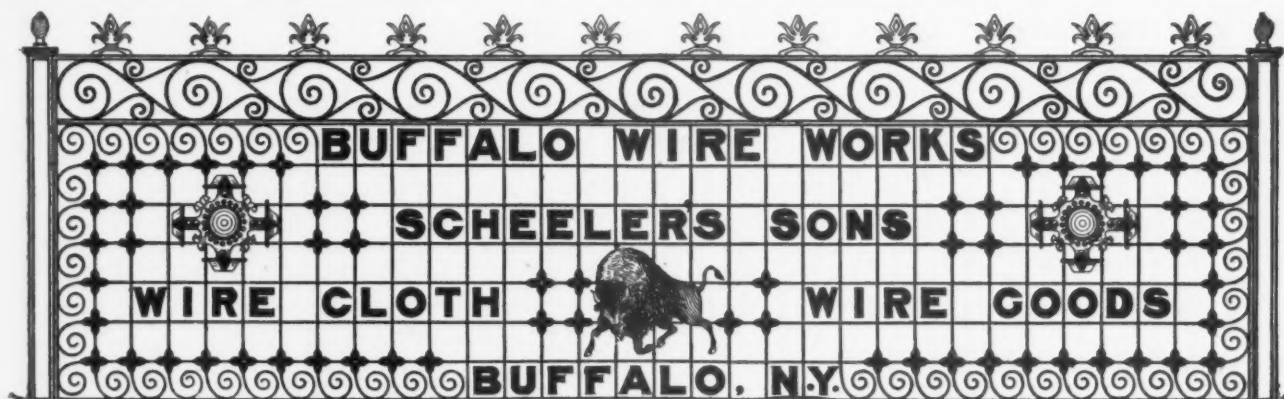
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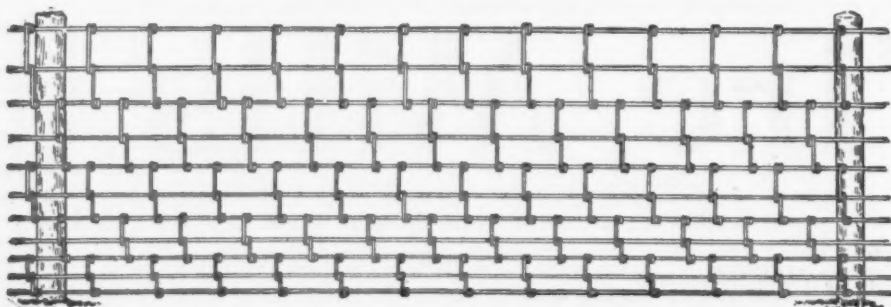
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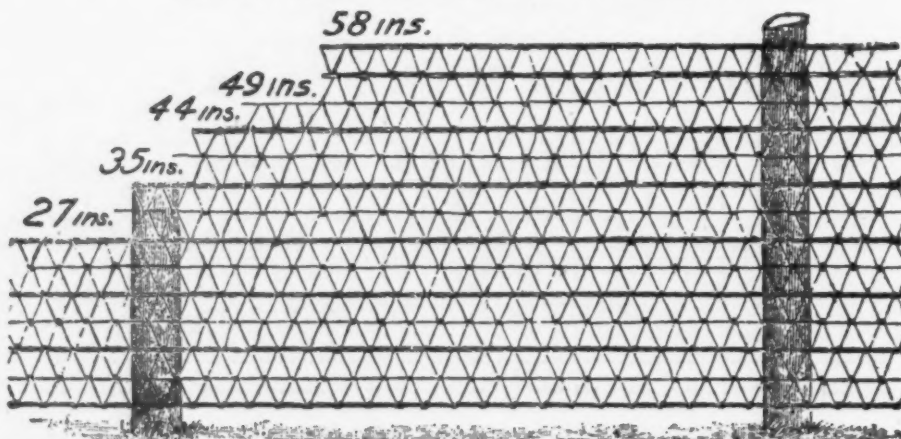
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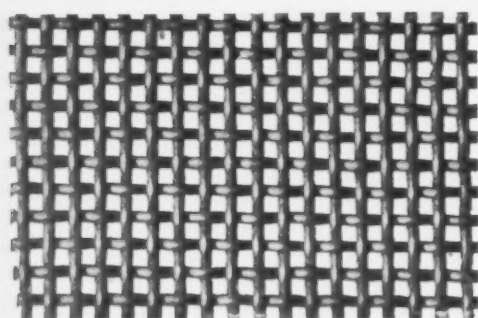
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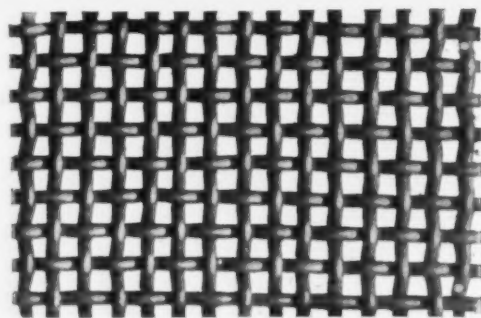
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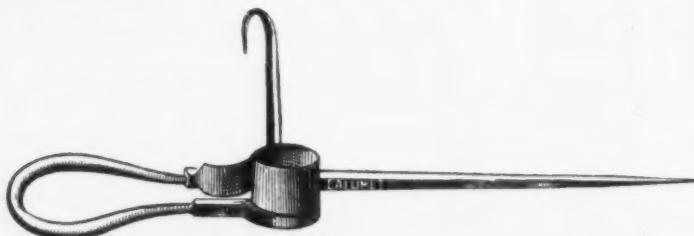
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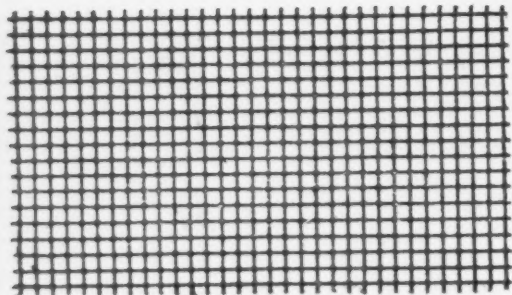
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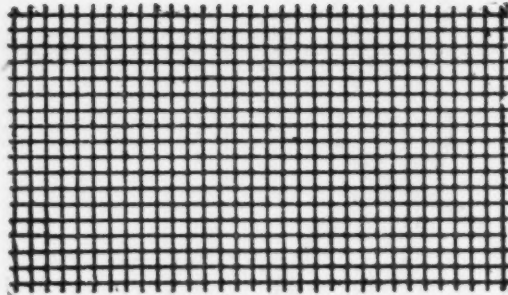


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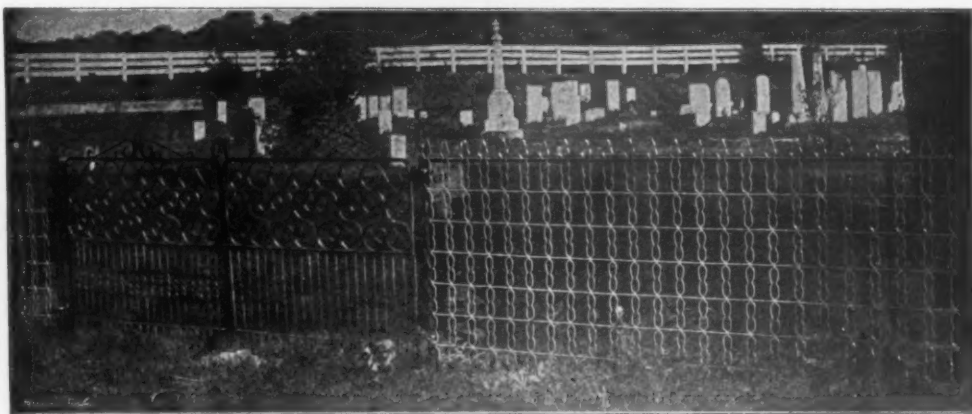
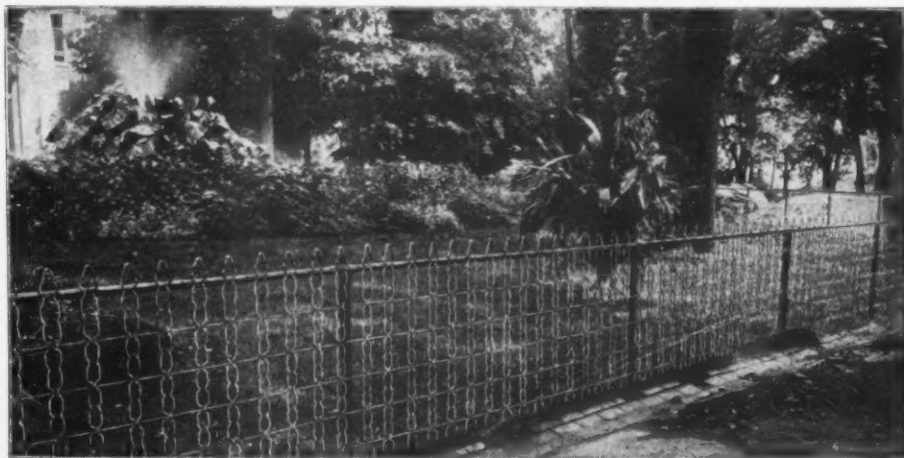
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This illustration affords a striking contrast between the past and the present. In the back-ground of this small cemetery appears the Board Fence of our forefathers, while in front is the "Hartman" Steel Picket Fence, with "Scroll Pattern" Double Drive Gates. This is our No. 2 (extra heavy), 43-inch Fence. Height is, of course, largely a matter of choice, based upon different tastes, but we can suit all—making the fence from 23 inches to 61 inches high.

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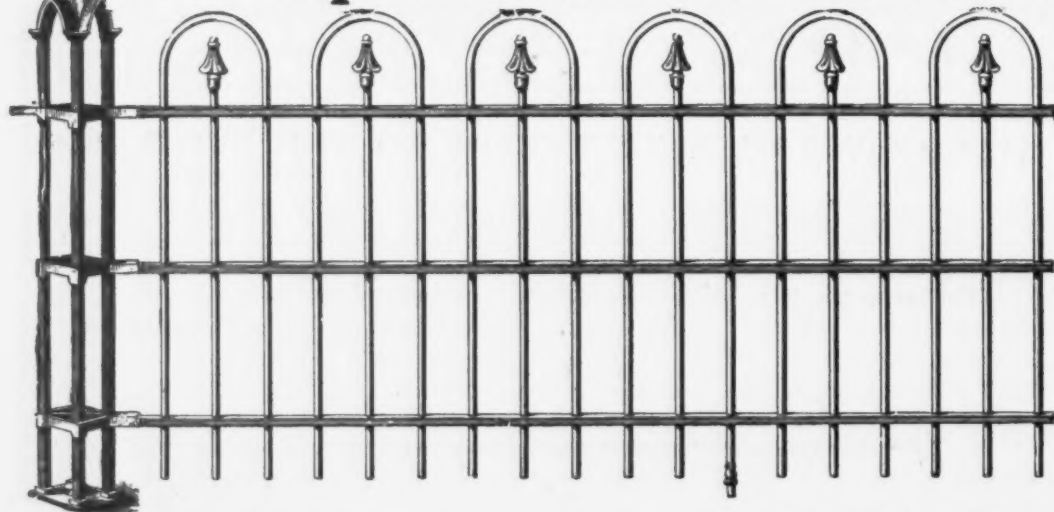
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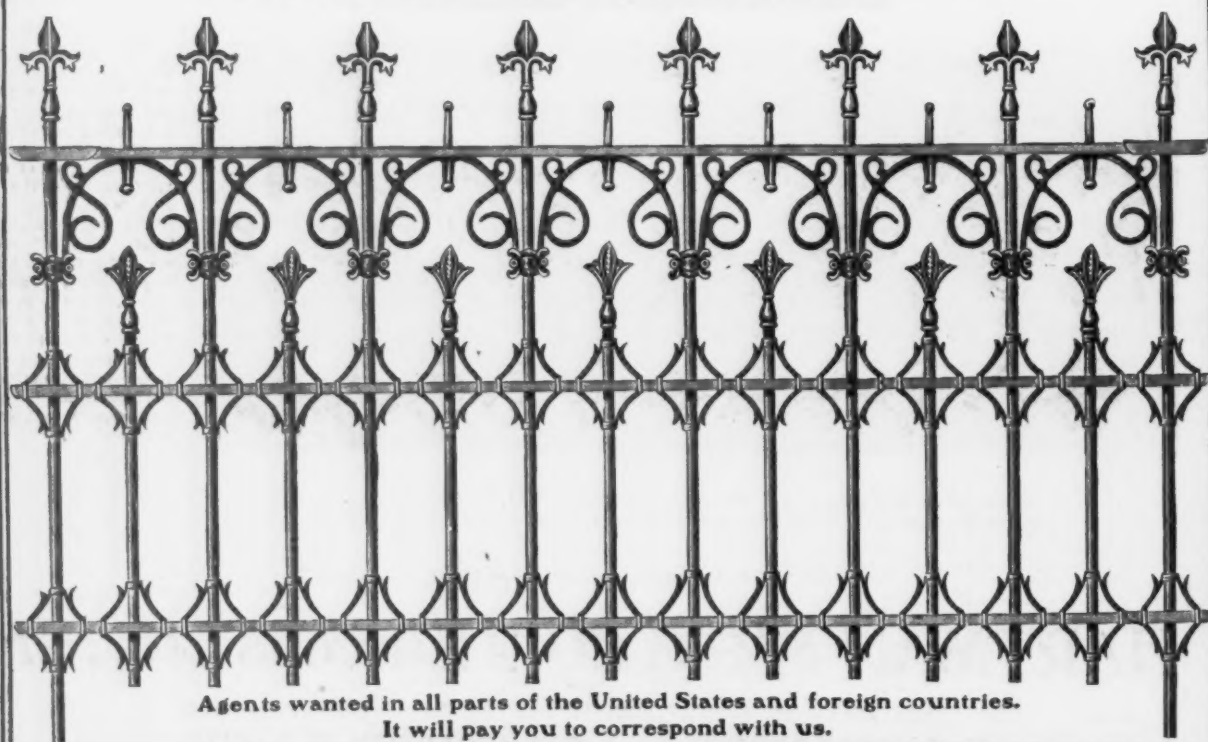


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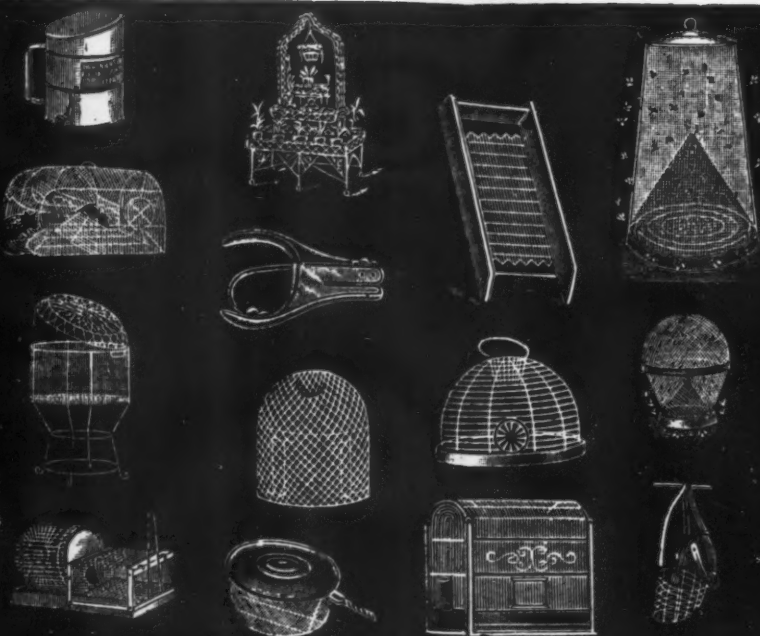
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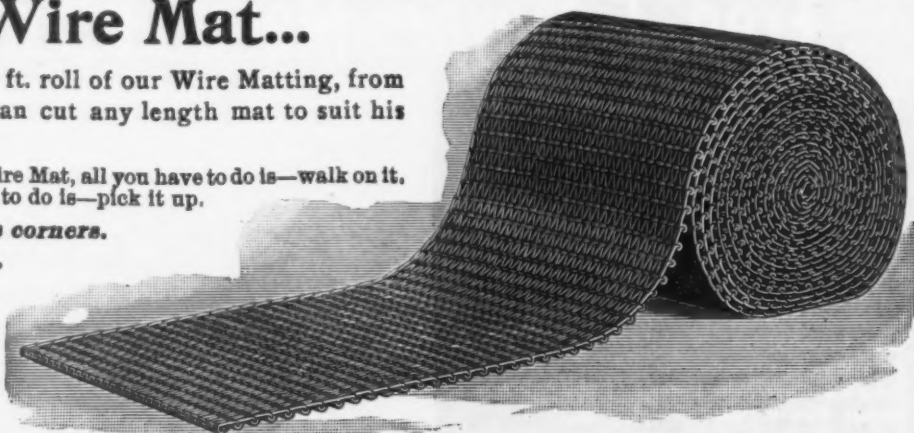
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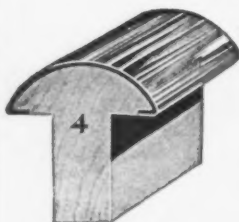
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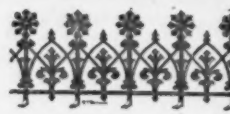
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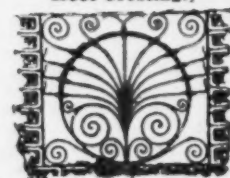
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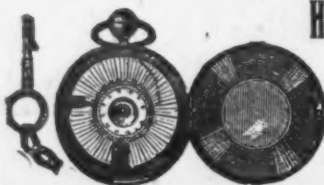


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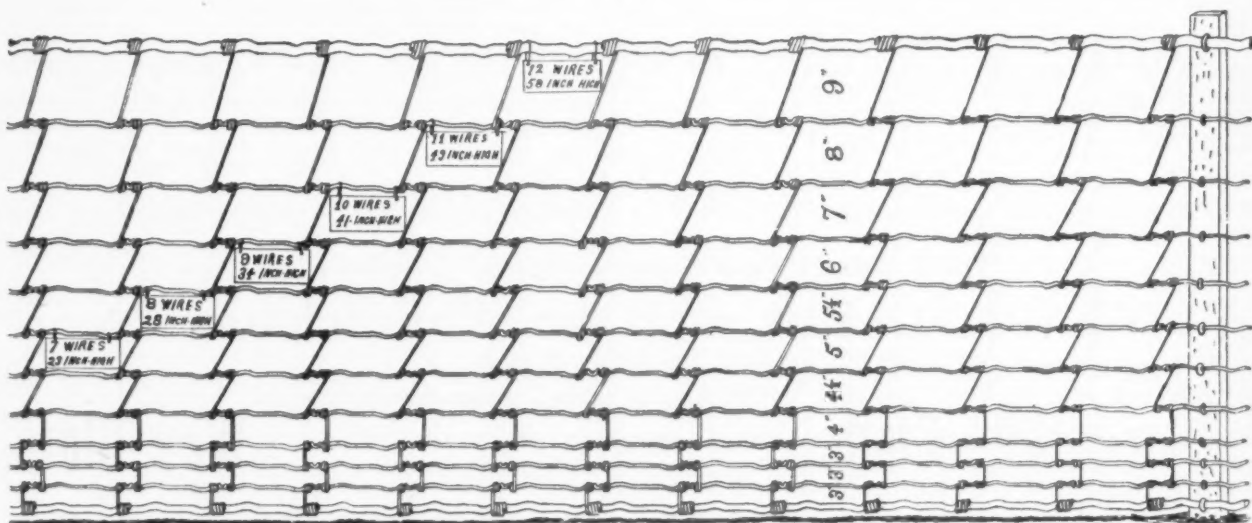


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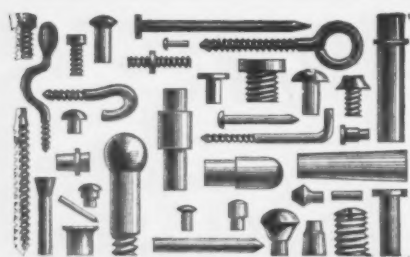
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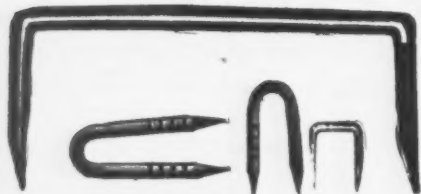
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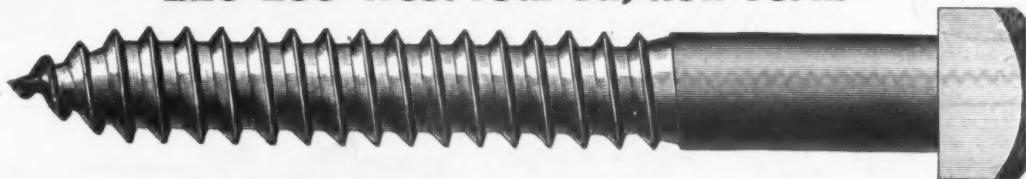
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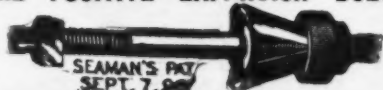
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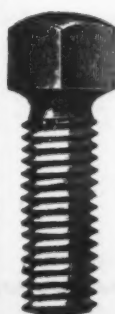
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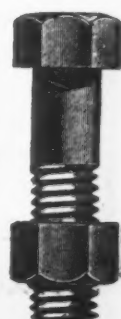


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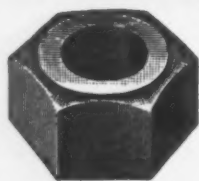
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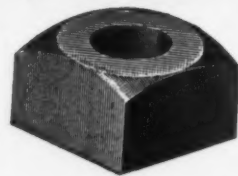
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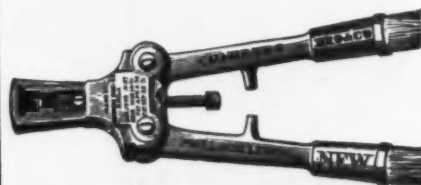
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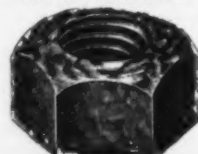
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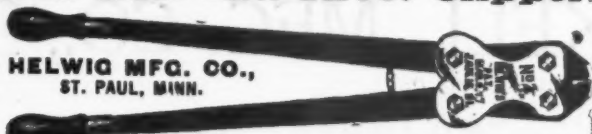


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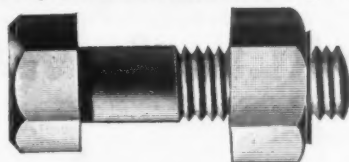
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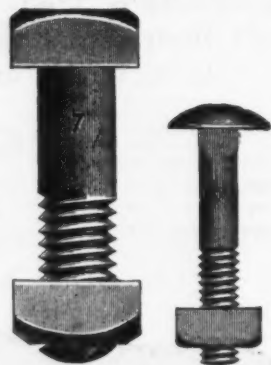
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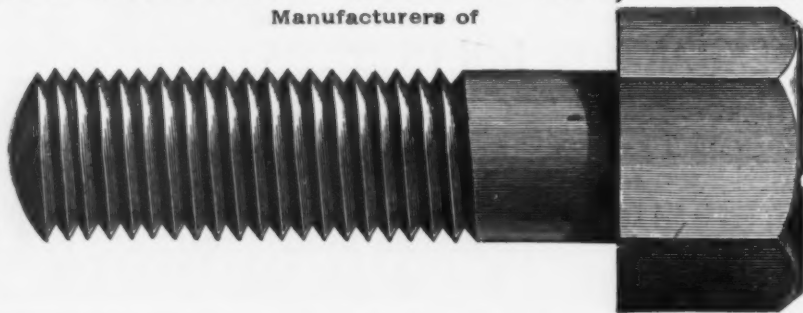
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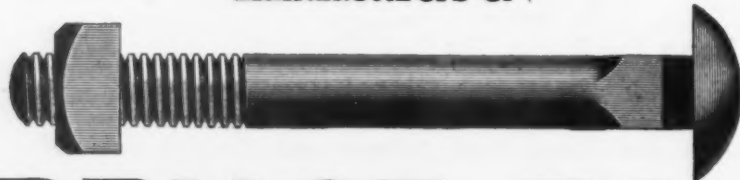
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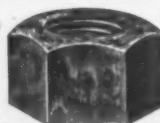
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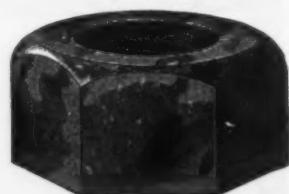
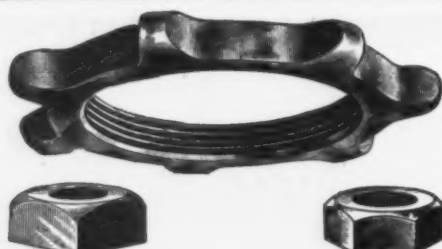
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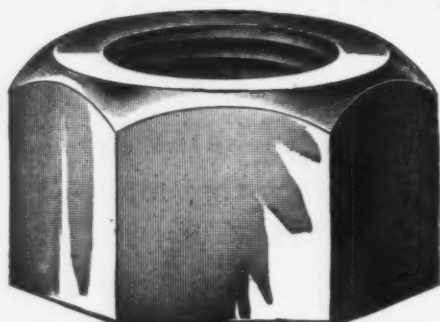
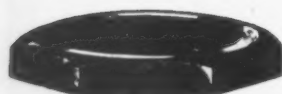
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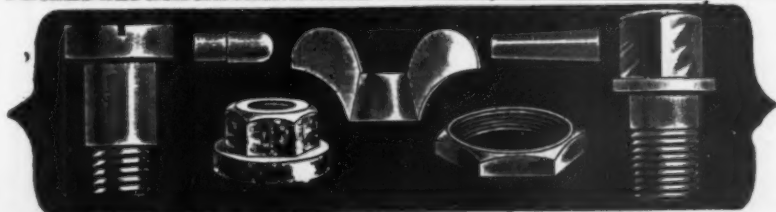
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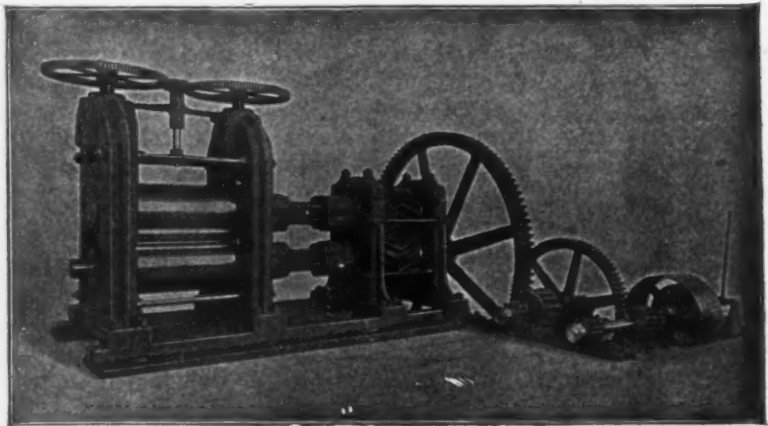
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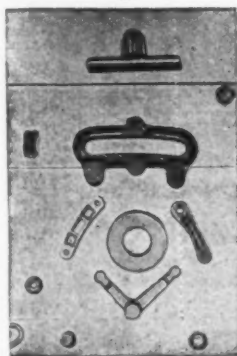
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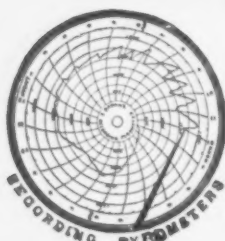
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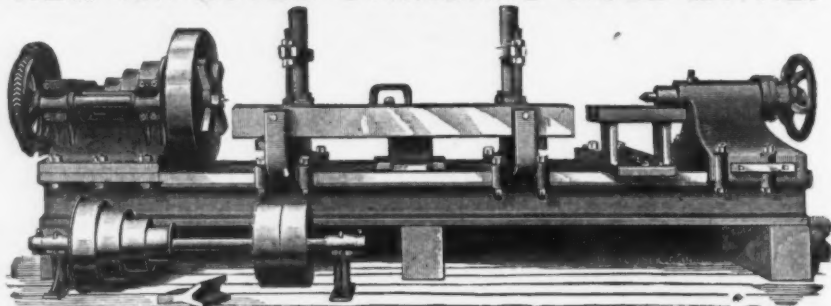
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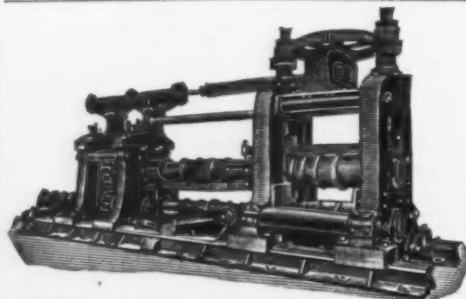
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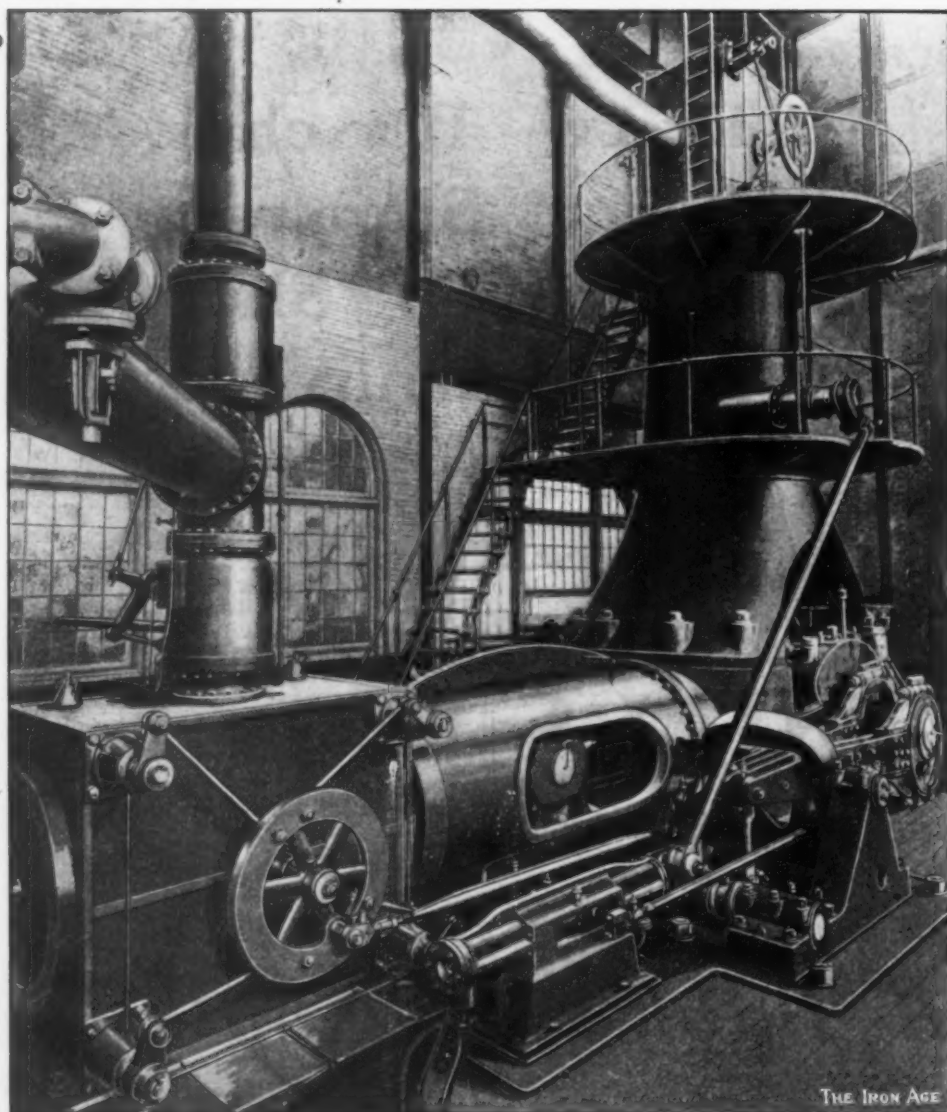
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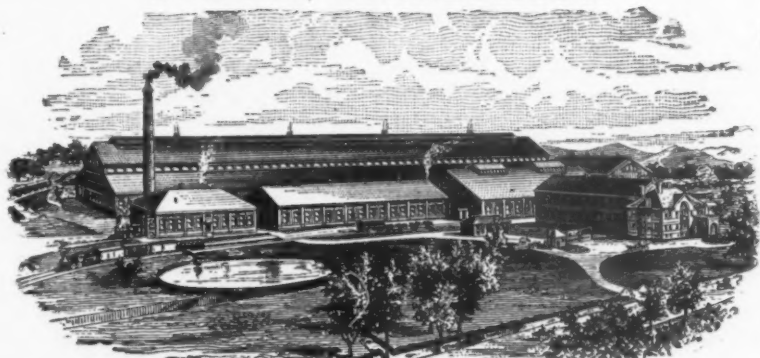
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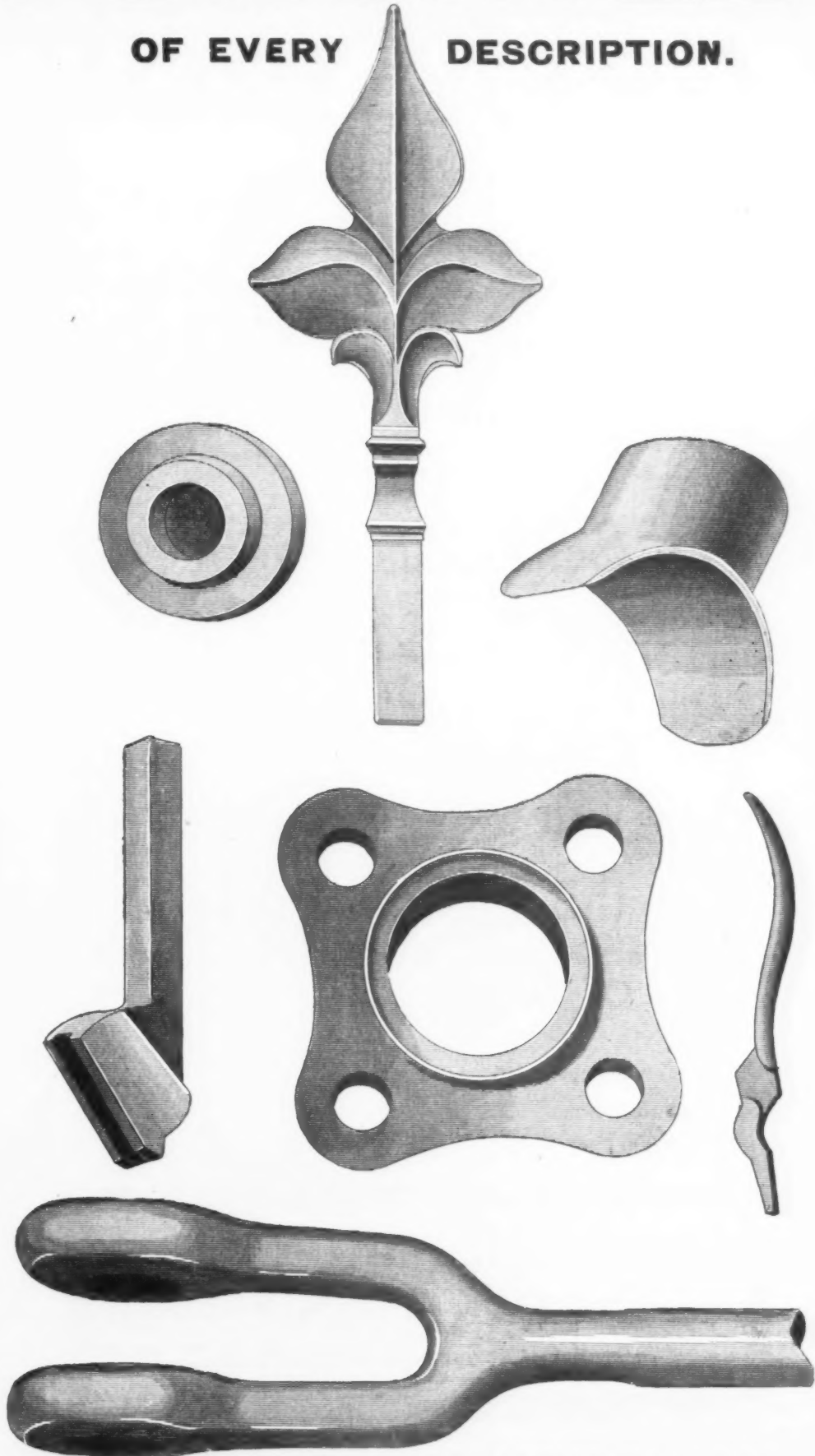
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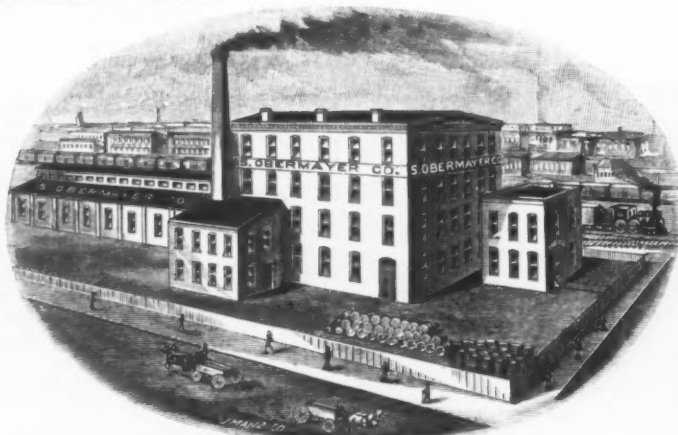
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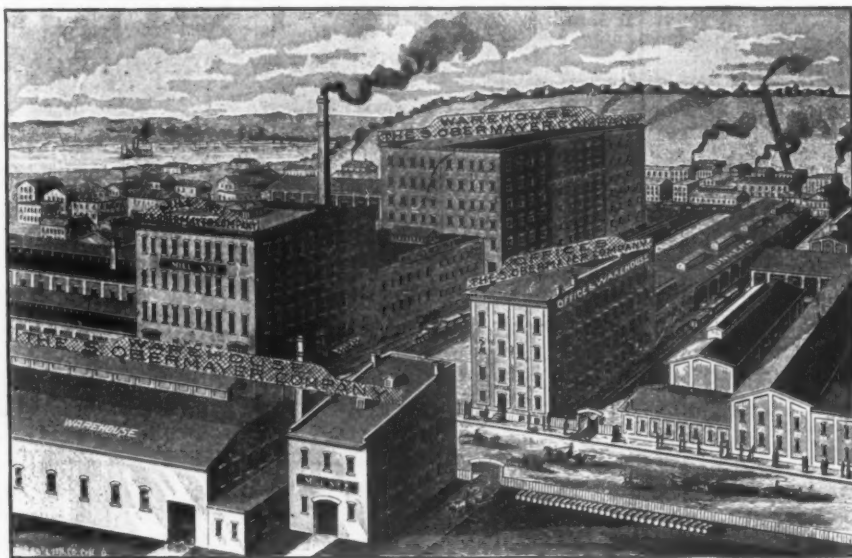
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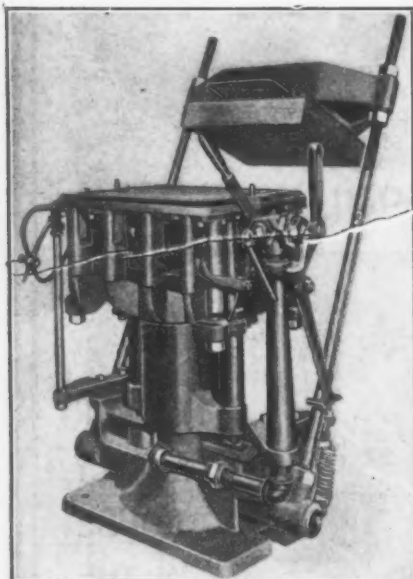
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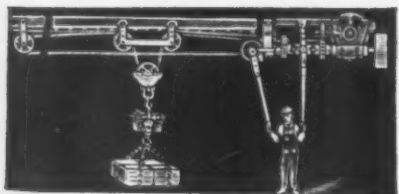
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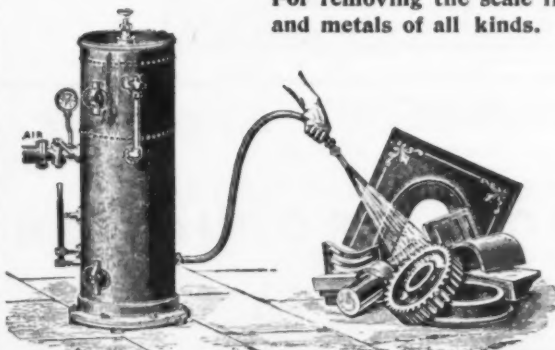
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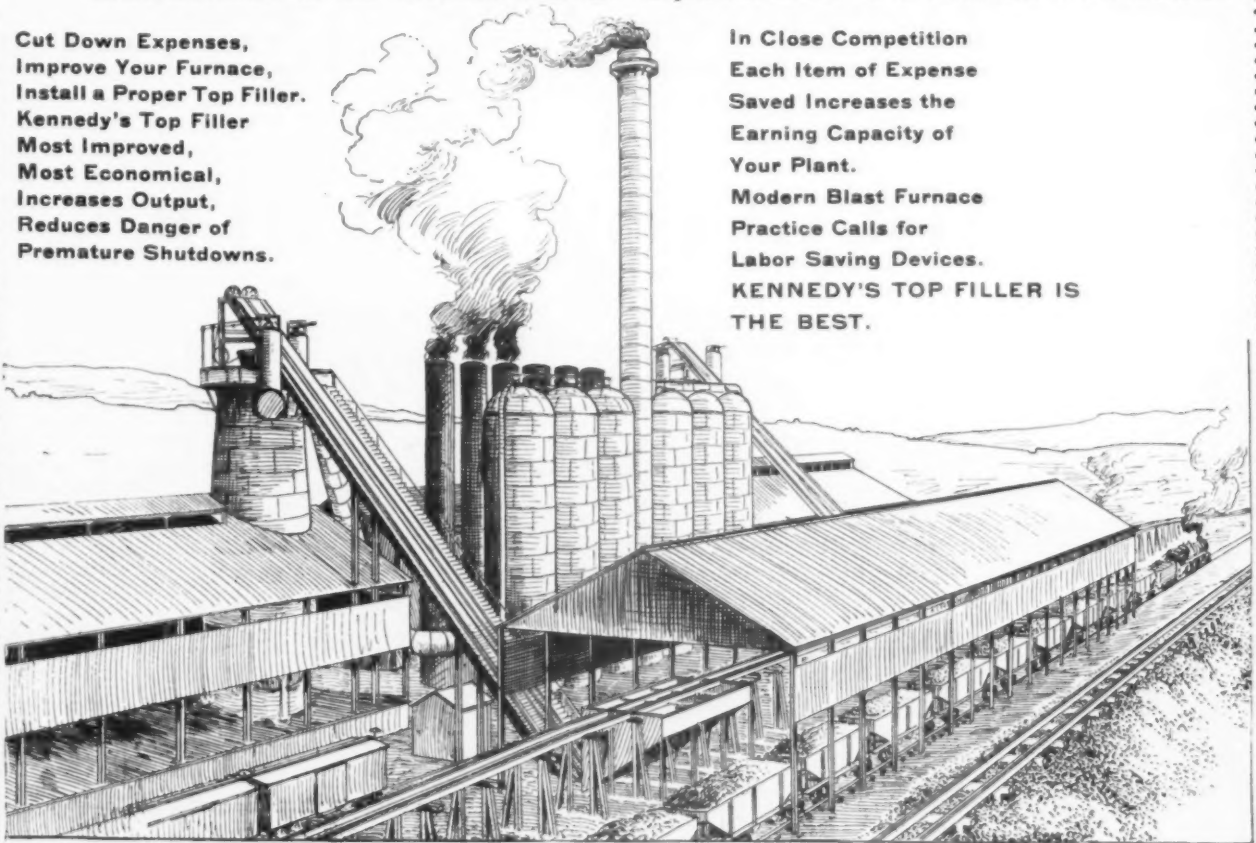
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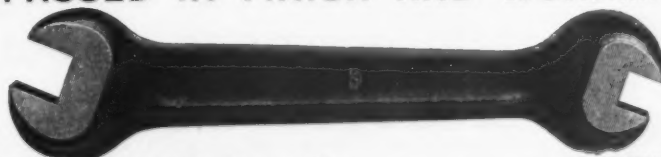
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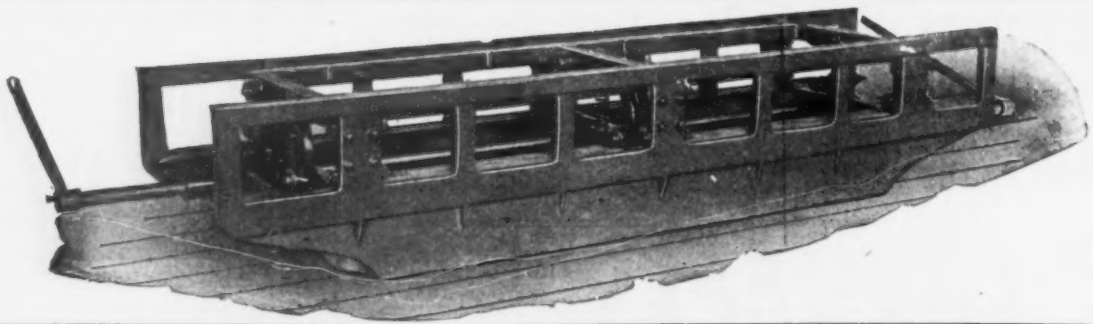
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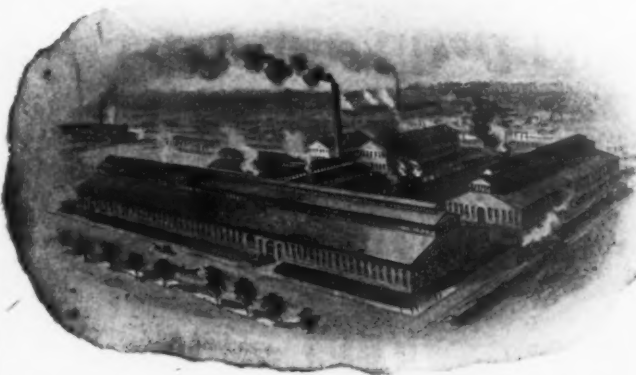
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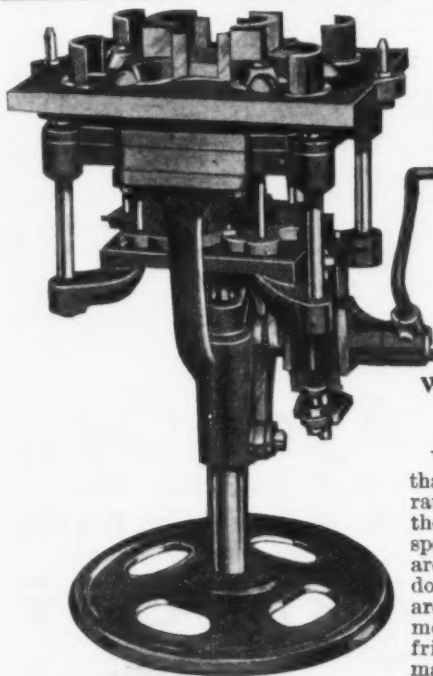
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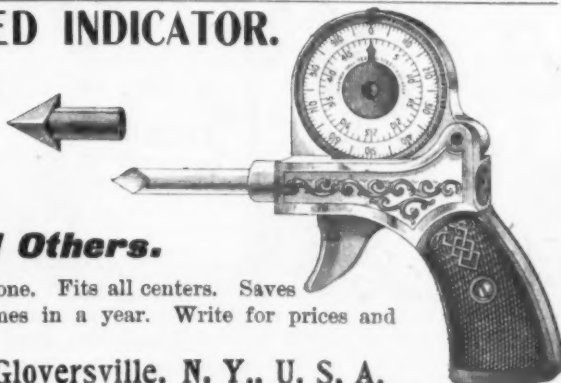
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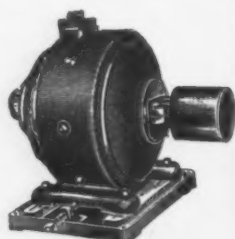
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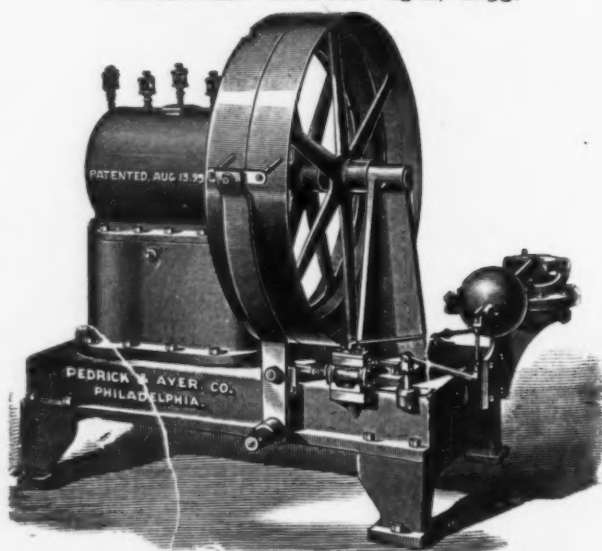
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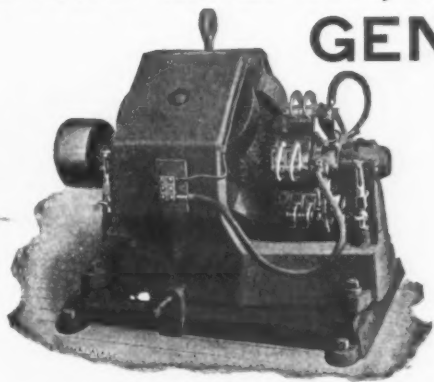
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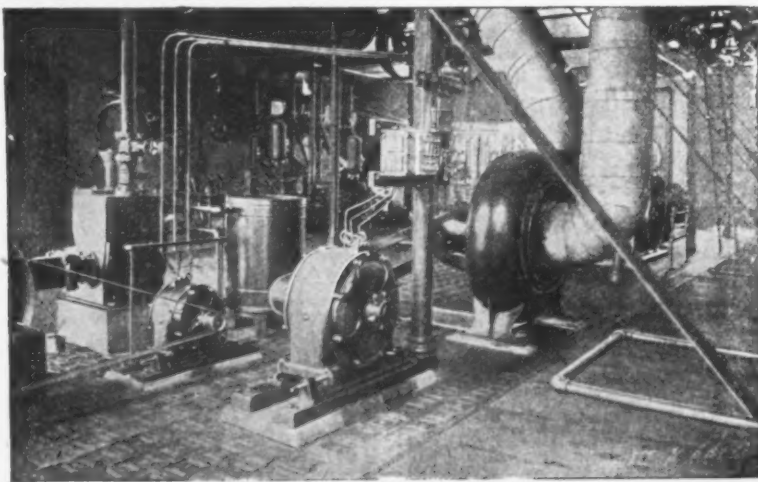
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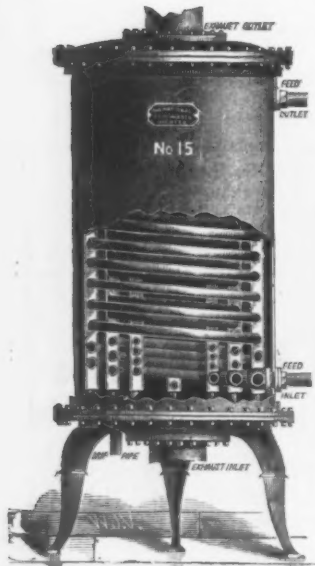
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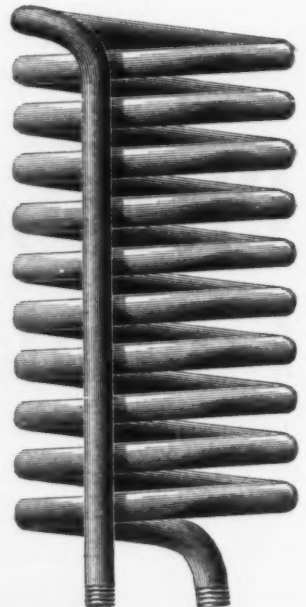


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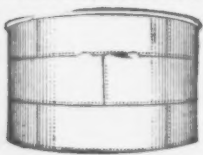
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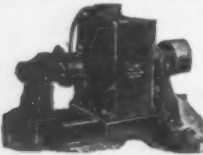


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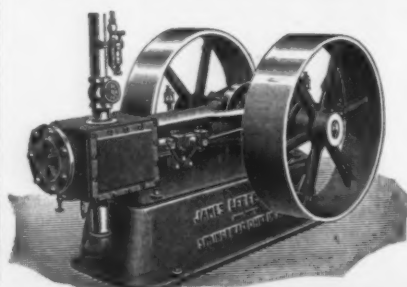
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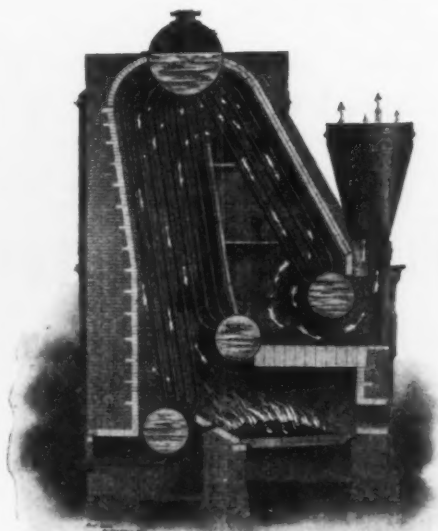
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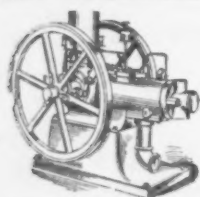
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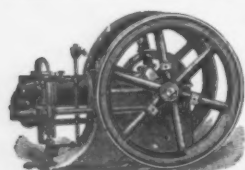


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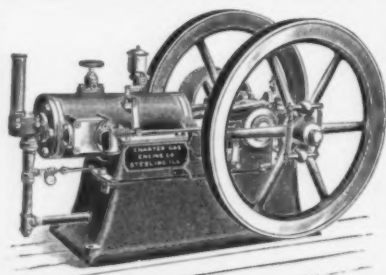


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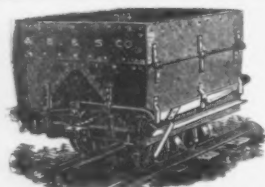
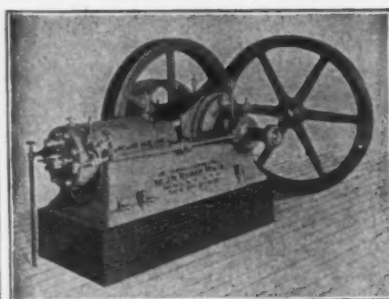
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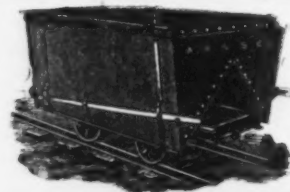
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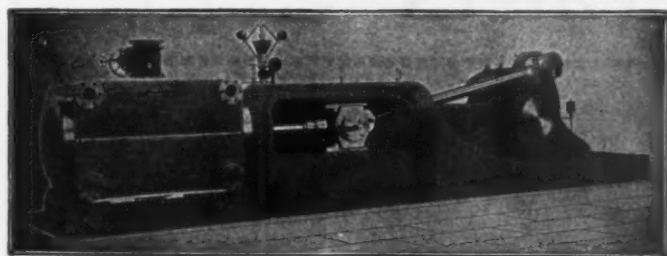


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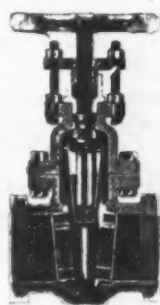
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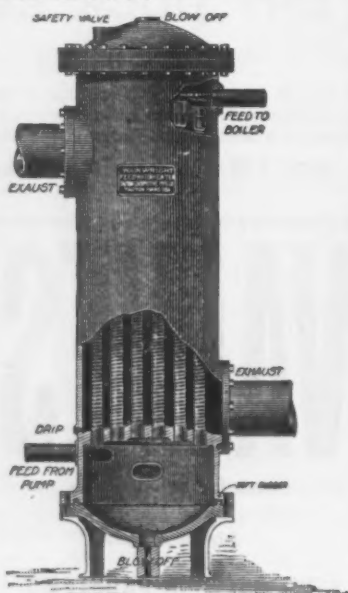
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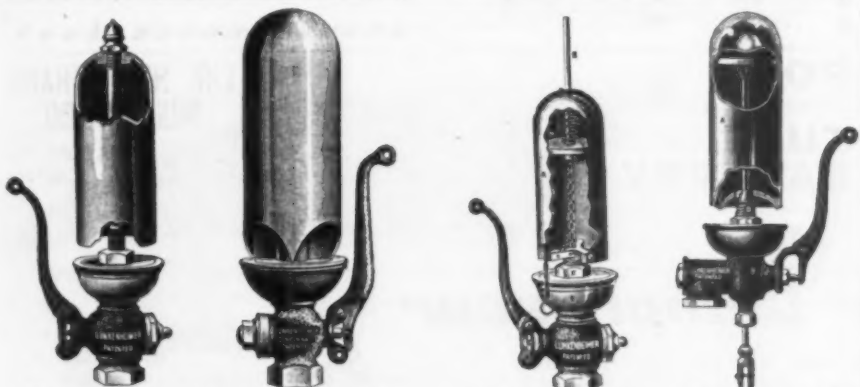
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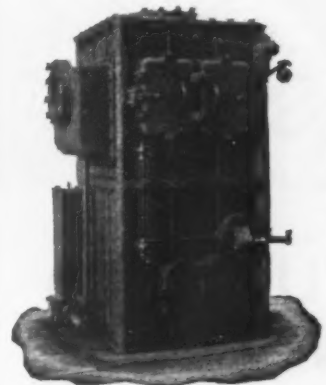
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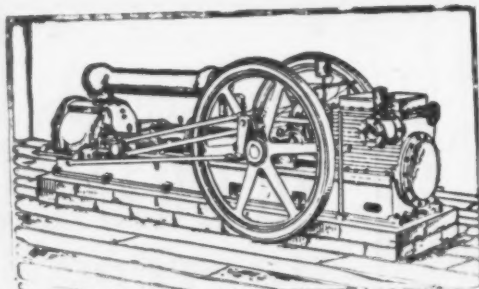
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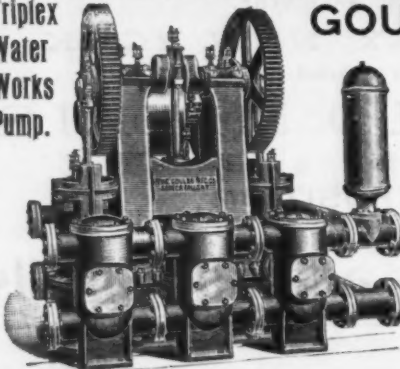
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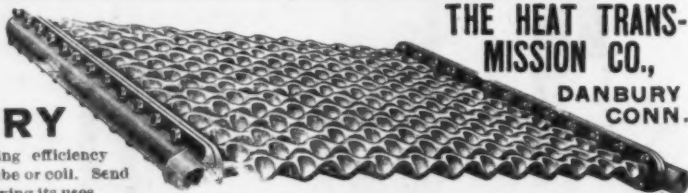
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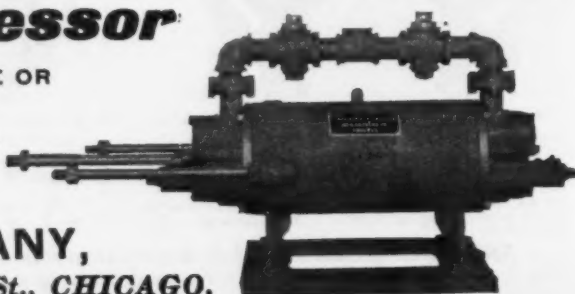
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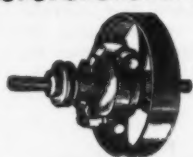
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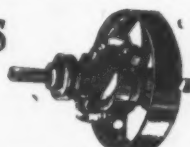
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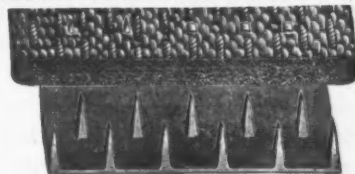
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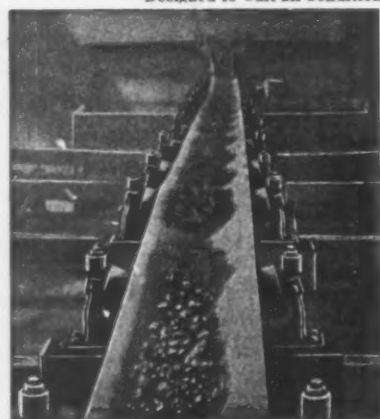
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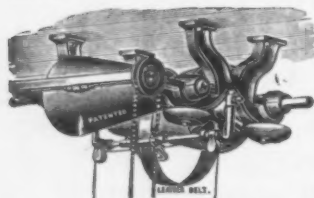
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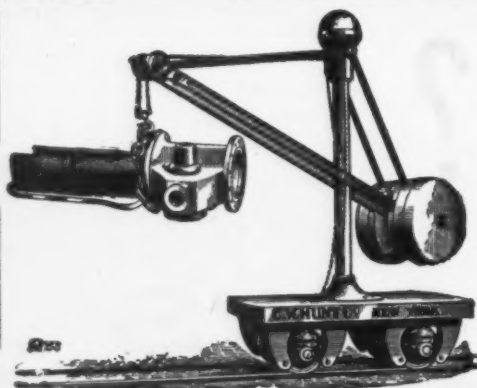
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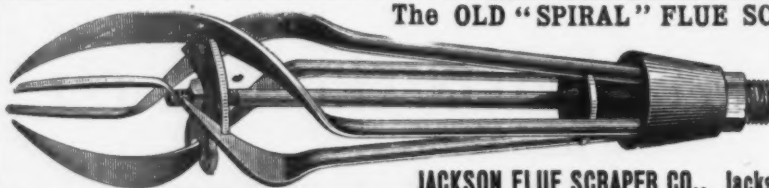
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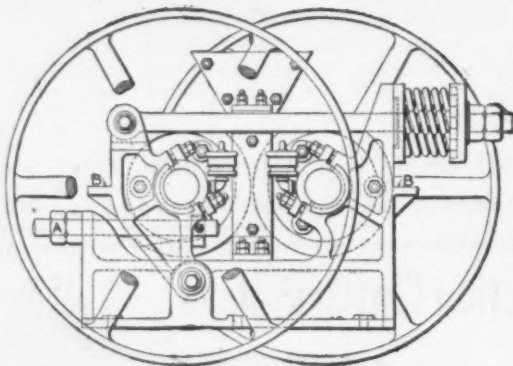


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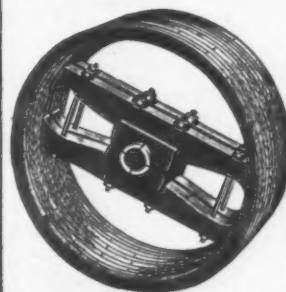
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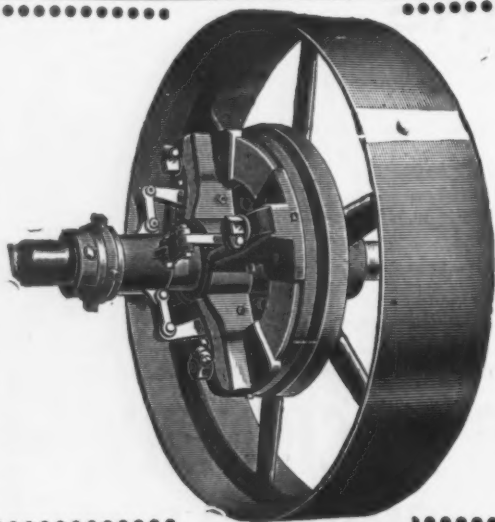
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Sole manufacturers of the celebrated Rainbow Packing, Peerless Piston and Valve Rod Packing, Eclipse Sectional Rainbow Gaskets, Hercules Combination, etc.
Largest manufacturers in the world of fine mechanical Rubber Goods.

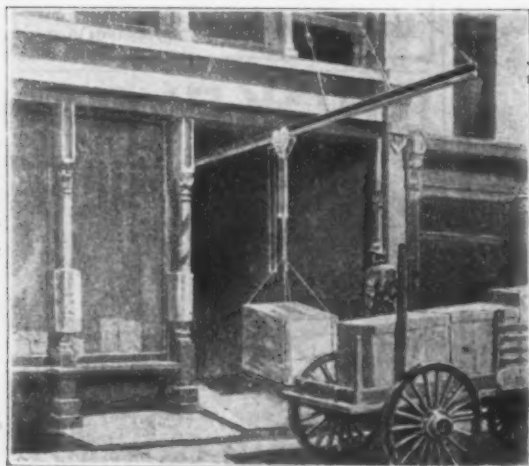
Copyrighted and Manufactured Exclusively by

THE PEERLESS RUBBER MANUFACTURING COMPANY
16 Warren Street, New York.

16-24 Woodward Ave., Detroit, Mich.

302-210 So. Water St., Chicago, Ill.

17-19 Beale St., and 18-24 Main St., San Francisco, Cal.



PNEUMATIC SELF-TRAVELING TROLLEYS

Adapted to any service where weights and substance in bulk is to be handled, doing away with hand labor. The only overhead automatic device having perfect mobility, traversing any distance, turning corners, switching from one track to others, running on to transfer tables, covering any desired rectangular space, quick acting, economical to operate and maintain, free from fire risk and suitable for the mercantile business as well as manufacturing.

WRITE FOR INFORMATION AND PRICES.

PNEUMATIC CRANE CO.,
BUILDERS OF OVERHEAD TRAVELING CRANES and AIR HOISTS.

26th and Liberty Sts.,

PITTSBURGH, PA.

SAME TO YOU!

Say, did you ever try writing an advertisement?

Did you ever try writing one every week and keep at it for a year? Tough job, eh? Well, we have been writing an advertisement for this paper week after week for seven long years. Every Thursday for the last seven years we have told you about Ridgway Cranes and Elevators and every time in a different way. The writer generally writes these cards Thursday afternoon after he has finished the mail and looked over the just arrived *Iron Age*. He knows he has a big audience who read the cards week after week, just because they like the flavor of them and not because they care particularly about Cranes and the like, and so, when he sits down to spin off the words here printed—and, by the way, these cards are always a first set down from the pen and are never rewritten—he feels a keen pleasure in the exercise, far above any commercial consideration.

Yet in spite of this pleasure and the hurried execution, and the accompanying bad grammar and worse English, it often is a problem to know just what to write the next time. This is the case to-day for this New Year ad. We are stuck for something to say. Of course, we are obliged to all you fellows who read us and keep a saying to all inquirers, "If you need a Crane, why don't you see Ridgway." "If you need an Elevator, that Ridgway 'hitch-er-to-the-biler' kind is the one for you." "Is it an Air Hoist you want?—well, Ridgway has the don't kill kind." It's very kind of you to advertise us this way and so we have taken our space to-day to say **MUCH OBLIGED TO YOU.** We say simply much obliged, and the pretty part is when we say it, we mean it.

"Please Take the Elevator."
HITCH 'ER TO THE BILER.

CRAIG RIDGWAY & SON CO.,
COATESVILLE, PA.

EUROPEAN AGENT.

CHAS. G. ECKSTEIN, 16 Spandauerstr., BERLIN, GERMANY.

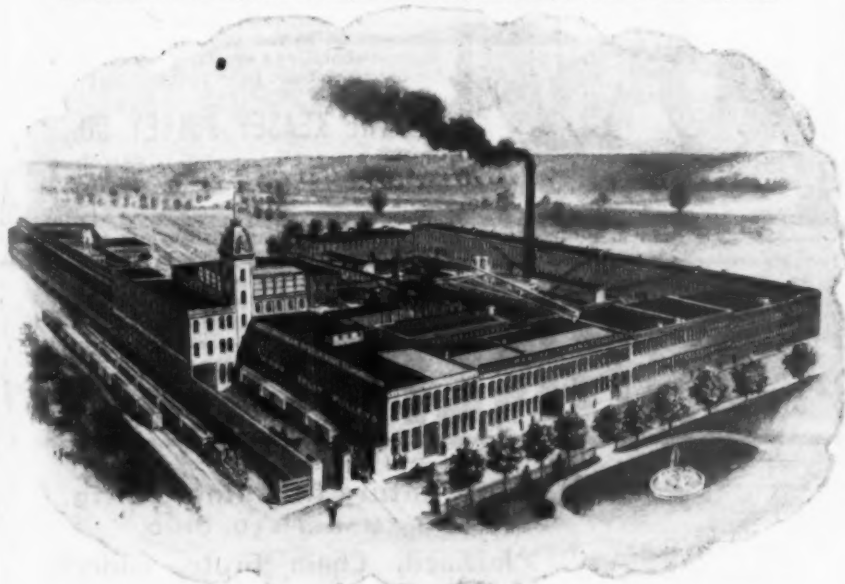


Buhl Malleable Co., Detroit, Mich.

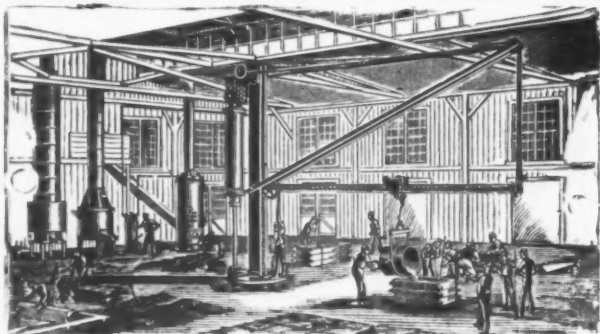
THE DODGE MANUFACTURING CO.,

Engineers, Founders, Machinists,
MISHAWAKA, IND.

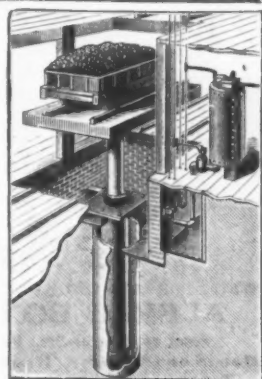
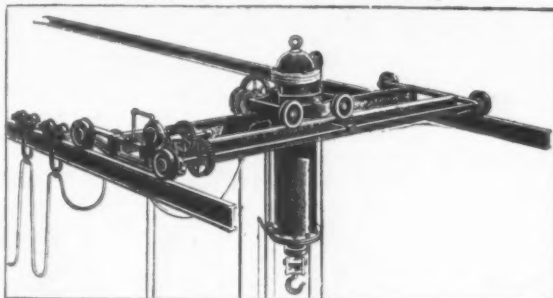
Branches: Boston, New York, Cincinnati, Chicago, Atlanta, London, Eng.



The largest factory in the world exclusively devoted to the production of
POWER TRANSMITTING MACHINERY.



5-Ton Steam Hydraulic Crane in a Foundry.



N. Y. Warehouse
and Office,

37 WARREN ST.

Alder & Boyd,

N. Y. SALES AGENTS.

**SELL THE BEST
THE "SURE GRIP"
Steel Tackle Block**

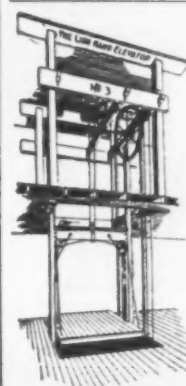
Is taking the place of all
other hoisting blocks.

Send for catalogue and discounts.

Fulton Iron & Engine Works,
28 Brush St., Detroit, Mich.

ESTABLISHED 1852.

—OR—
RICE LEWIS & SON, Ltd.
TORONTO, CANADA.



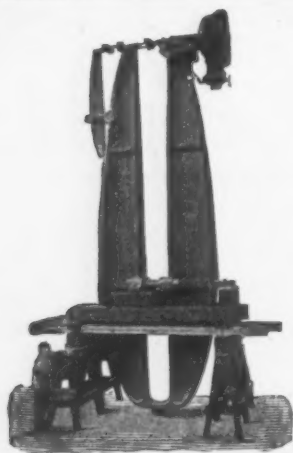
**FRANKLIN MACHINE
WORKS,**
St. Paul, Minn.

ROBT. SIGEL, Mgr.

Manufacturers of first class

**HAND AND
POWER
ELEVATORS**

Send for circular.



William Sellers & Co. Incorp.

Philadelphia, Pa.

RIVETING MACHINES.

NOTE.—We make Steam, Hydraulic, Pneumatic, Portable and Stationary Riveting Machines. We show herewith a 16 ft. Riveting Machine with 36 inch Steam Cylinder and provided with an auxiliary steel stake for small flues.

BOB'S
DOUBLE SCREW CHAIN HOISTS.
(PORTABLE.)

ALL CAPACITIES



RANGING TO 20,000 LBS.

WRITE FOR LIST AND NEW DISCOUNT SHEET
ALFRED BOX & CO.,

Front and Poplar Sts., PHILADELPHIA.
Hoists and Trolleys, Hand or Electric, for
Travel on Lower Flanges of I Beams.



The "King" Chain Block

With Patent Automatic Friction
Brake.

1000 to 20,000 lbs.
Capacity.

Portable Beam Punches.
Hand Punches and Shears
Combined.

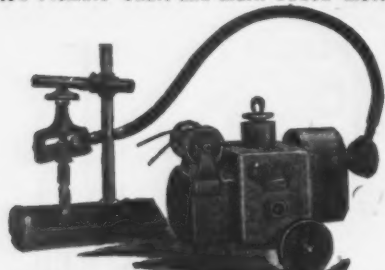
Scroll and Screw Punches.

Sheet Iron Shears.

Clamp Drills.

CHAS. G. ECKSTEIN,
249 Centre St., New York.

Combination of ESTABLISHED 1875
Stow Flexible Shaft and Multi-Speed Motor.



Practically dust and water proof. For Portable
Drilling, Tapping, Reaming, Emery Grinding, etc.
Write for Catalogue and prices.

STOW MFG. CO., Binghamton, N. Y.
General European Agents, **BEILIG, SONNENTHAL &
CO.,** 85 Queen Victoria St., London, England.

- CRANES -



NORTHERN ENGINEERING WORKS

NO 2 CHENE ST.
DETROIT, MICHIGAN.

CLEVELAND CRANE AND CARCO
L. H. GIBSON
EASTERN AGT.
PARK BLDG.
PITTSBURG, PA.
116-138 WASON ST.
CLEVELAND O.

READING CRANE & HOIST WORKS READING, PA.

HAND POWER TRAVELING CRANES in all sizes and styles.
SPUR GEARED CHAIN BLOCKS with Patent Automatic Friction
Brake from $\frac{1}{4}$ ton to 20 tons capacity.

Overhead Tracks, Trolleys, Switches, Etc.



KEASEY SPLIT WOOD PULLEYS

Are made with MALLEABLE IRON hubs.

Do not slip on the shaft. Guaranteed for
any power or speed. Over 500,000 Keasey
Pulleys in daily use all giving perfect satis-
faction. Large and extra heavy main drive
keyseated pulleys a specialty. Send for cata-
logue and prices. Sales agencies in principal
cities.

THE KEASEY PULLEY CO.,

Western Selling Dept.: Toledo, Ohio, U. S. A.
Jewell Belting Co.,
175-177 Lake St., Chicago, Ill.

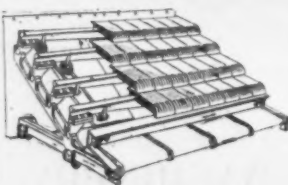
WARNER ELECTRIC ELEVATORS

(Passenger and Freight).

LARGEST FACTORY IN THE UNITED STATES
OUT OF THE COMBINATION.

Established in 1860.

THE WARNER ELEVATOR MFG. CO.
CINCINNATI, O.



The Century Machine & Mfg. Co.,
MANSFIELD, OHIO.

Inclined, Chain Grate, Underfeed
Mechanical Stokers.

WRITE FOR FULL INFORMATION.

MILL AND SPECIAL MACHINERY.

The Aultman Company,

Engineers, Founders and Machinists.

General Office:

CANTON, = OHIO.

Eastern Office:

PHILADELPHIA, 718 Fidelity Building.

*Elevating, Conveying and Power
Transmission Machinery.*

Conveyors,

Elevators,

Chains,

Sprockets,

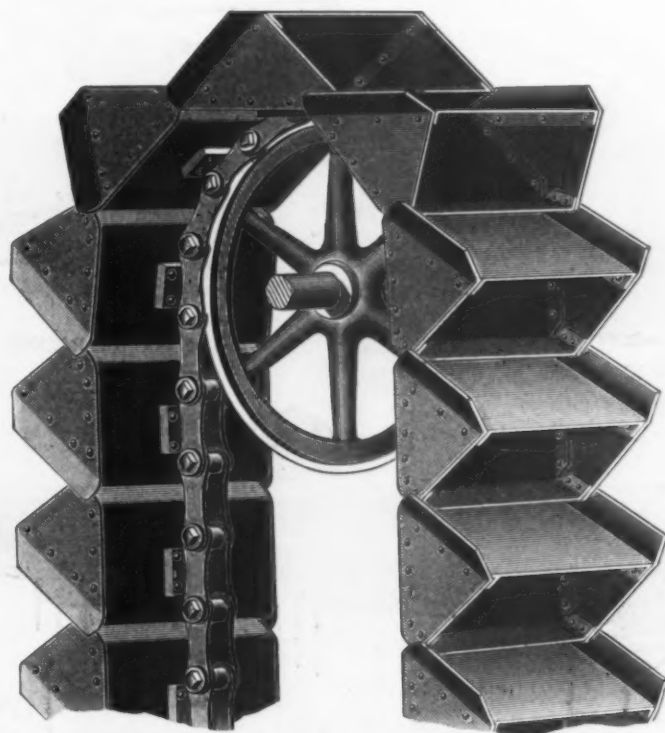
Bearings,


Boots,

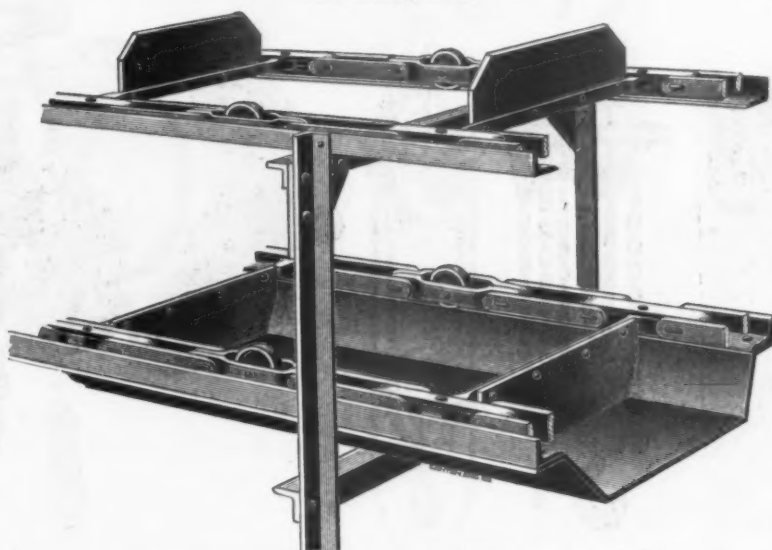
Take Ups,

Trough,

Flights,



CONTINUOUS BUCKET, PERFECT DISCHARGE ELEVATOR,  FOR HANDLING COAL, ORE, STONE, SAND CEMENT, ETC.



DOUBLE STRAND SCRAPER CONVEYOR.

Coal

Crushers,

Rock

Crushers,

Ore

Crushers,

Engines,

Shafting,

Hangers,

Pulleys,

Sheaves,

Manilla

Rope.

SEND FOR COMPLETE CATALOGUE.

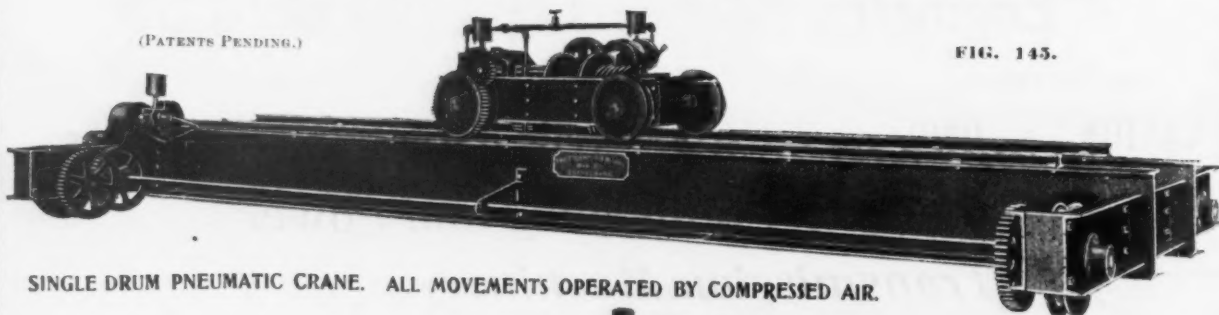
THE CHISHOLM & MOORE MFG. CO.

PNEUMATIC AND HAND POWER

CRANES

(PATENTS PENDING.)

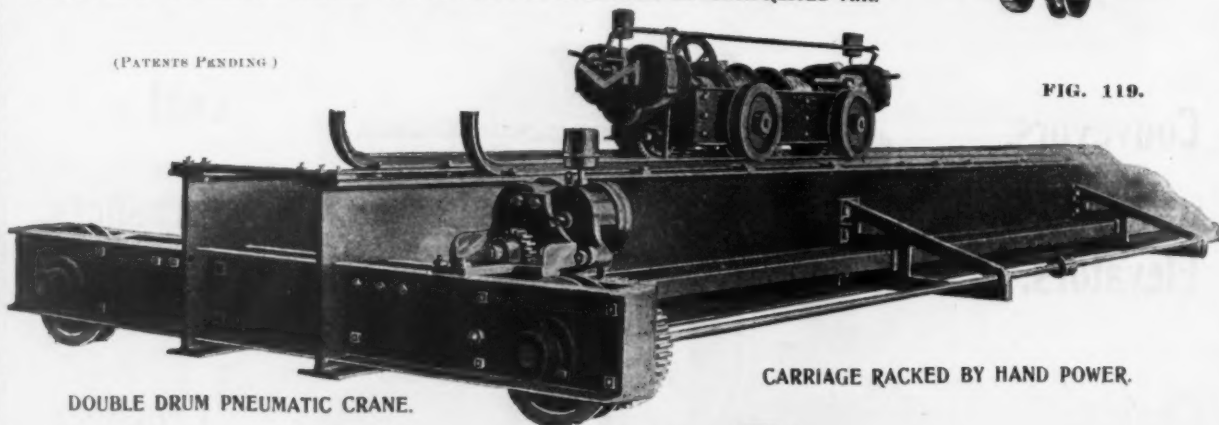
FIG. 145.



SINGLE DRUM PNEUMATIC CRANE. ALL MOVEMENTS OPERATED BY COMPRESSED AIR.

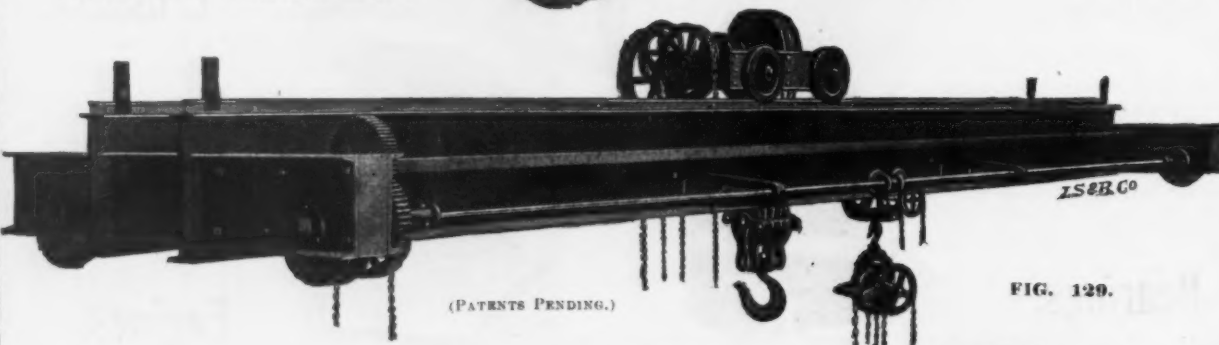
(PATENTS PENDING.)

FIG. 119.



DOUBLE DRUM PNEUMATIC CRANE.

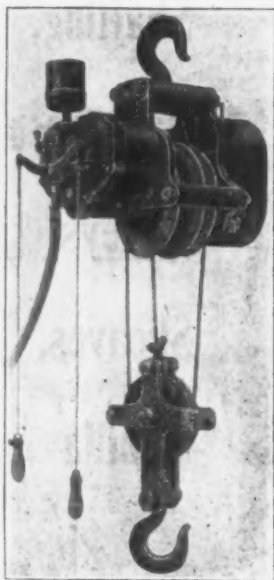
CARRIAGE RACKED BY HAND POWER.



(PATENTS PENDING.)

FIG. 129.

20 TON HAND POWER CRANE WITH 5 TON SUPPLEMENTAL HOIST AND TROLLEY.



(PATENTS PENDING.)
"Moore" Portable
Pneumatic Hoist.



"Moore" Anti-Friction
Chain Hoist.



"Direct" Differential
Chain Hoist.



(PATENTS PENDING.)
"Moore" Stationary
Pneumatic Motor.

SEND FOR CATALOGUE.

CLEVELAND, OHIO, U.S.A.

A New Model for the New Century!

OUR TYPE "E"

Electric Controller

Compact.

Self contained.

No separate Resistance Boxes.

Any desired resistance.

Thoroughly ventilated.

All parts readily accessible and removable.

No combustible material.



Has powerful blow-out magnets, preventing arcing.

No electrical contacts on vertical faces of controller. Contact face is at top of controller and covered.

Controllers can be set close together,—no clearance required.

All live contacts and parts are under cover.

DESIGNED FOR THE MOST SEVERE SERVICE.

THREE SIZES:

Type E 1, 24 Steps. Clearance dimensions, $14\frac{3}{4} \times 25\frac{1}{2}$ inches.	} Height to top of lever, 42 inches.
Type E 2, 16 Steps. Clearance dimensions, $10 \times 25\frac{1}{4}$ inches.	
Type E 3, 12 Steps. Clearance dimensions, $10 \times 25\frac{1}{2}$ inches.	

Address for further particulars,

THE ELECTRIC CONTROLLER & SUPPLY CO.,

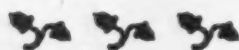
31 Michigan Street,

Cleveland, Ohio, U. S. A.

ELECTRIC AND HAND Traveling Cranes



*Send for our Sixth
Edition Crane Catalogue
of Electric Traveling
Cranes from 5 to 150
ton Capacity. Just out.*



Pawling and Harnischfeger

FACTORY AND MAIN OFFICE

MILWAUKEE, WIS., U. S. A.

<i>Chicago Office</i>	<i>Pittsburgh Office</i>	<i>New York Office</i>
Monadnock Bldg.	Fidelity Bldg.	Bowling Green Bldg.

The All-Wrought Steel Split Pulley.

Patented and Patents Pending in U. S.

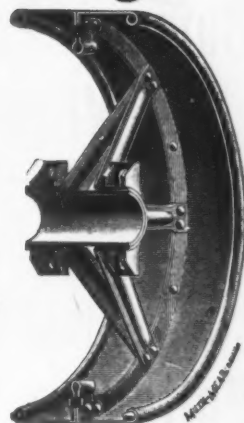
Patented Throughout the World.



INTERCHANGEABLE METAL BUSHINGS
TO FIT
ALL SIZES SHAFTING.

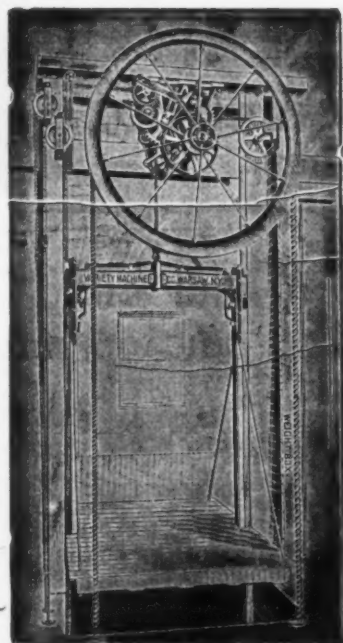
Sold by the best Hardware and Supply
Houses all over the World.

SEND FOR CATALOGUE AND PRICES.



THE AMERICAN PULLEY COMPANY - Philadelphia, Pa.

Our Elevators have steel roller bearings throughout—made upon the same principle of a ball bearing bicycle—that's why they run so easy and smooth. They are easy to erect and any "handy man" can do it, because the winding machine or overhead gearing is all securely bolted together before shipment and our instructions and blue prints tell you where each piece goes, so you can't make a mistake.



ELEVATORS.

DUMB WAITERS.

For Hand or Power, Freight or Passenger Service.

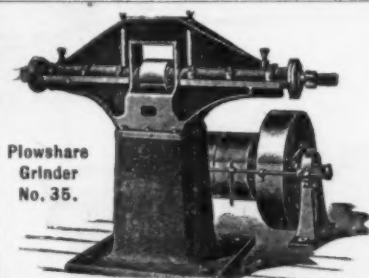
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VARIETY MACHINE CO.,

Warsaw, New York, U. S. A.

NEW YORK AGENTS:

WHITE, VAN GLAHN & CO., 15-16-17 Chatham Square, 49 E. 42d St., New York.



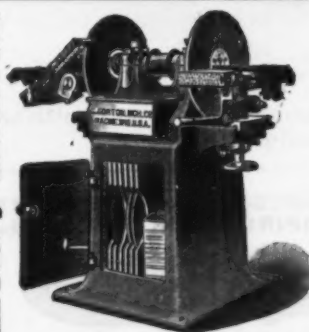
Plowshare
Grinder
No. 35.

THE
SAFETY EMERY WHEEL
COMPANY,
MFRS. OF
EMERY WHEELS
AND
GRINDING MACHINERY.

Pioneers of the only successful safety system of using Emery Wheels.

SEND FOR CATALOGUE.

SPRINGFIELD, O.



Money Makers.

FLAT SURFACE GRINDERS.

New 40-page illustrated Catalogue No. 100 for the asking, showing the latest machine out.

GUARANTEED SUPERIOR OR NO SALE.

GEO. GORTON MACHINE CO.,

13th, 14th and Racine Streets,
Racine, Wis., U. S. A.

HIGHEST AWARD AT PARIS EXPOSITION.

Elevators, PASSENGER AND FREIGHT.....

Specialty—

Hindley Worm Gearing.

Morse, Williams & Co.,
PHILADELPHIA.

Send for Catalogue R.



AMES SWORD CO.
Chicopee, Mass.

Manufacturers of

Endless Silk Sowed
Polishing Belts.

CORRESPONDENCE SOLICITED
DISCOUNTS QUOTED.

HIGH-GRADE Buffing and Polishing Wheels.

OUR CATALOG TELLS THE STORY
WRITE FOR IT.

MAKERS OF THE CELEBRATED

"Compress" Polishing Wheel.

DIVINE BROTHERS CO., Utica, N. Y., U.S.A.



ONE MAN

with a Carborundum Wheel will do as much work as two, three or four men with other abrasives—and do it better.

Carborundum not only cuts faster and cleaner than other abrasive wheels, but it lasts longer. It does not grow smooth or gummy—

The cutting edge is always fresh and sharp. It does not heat the work. It costs a little more in the first place, but in the long run is by far the cheapest abrasive in use.

May we prove all these things to you?

The Carborundum Company,
Niagara Falls, N. Y.



Buffing
and
Strapping
Lathes.

Endless
Polishing
Belts.

Prices low.
Based on ab-
solute cost.

Write us.

SPRINGFIELD MFG. CO., Bridgeport, Ct.

NORTON

EMERY



WHEELS.

REASONS IN OUR COMPLETE ILLUSTRATED CATALOGUE.

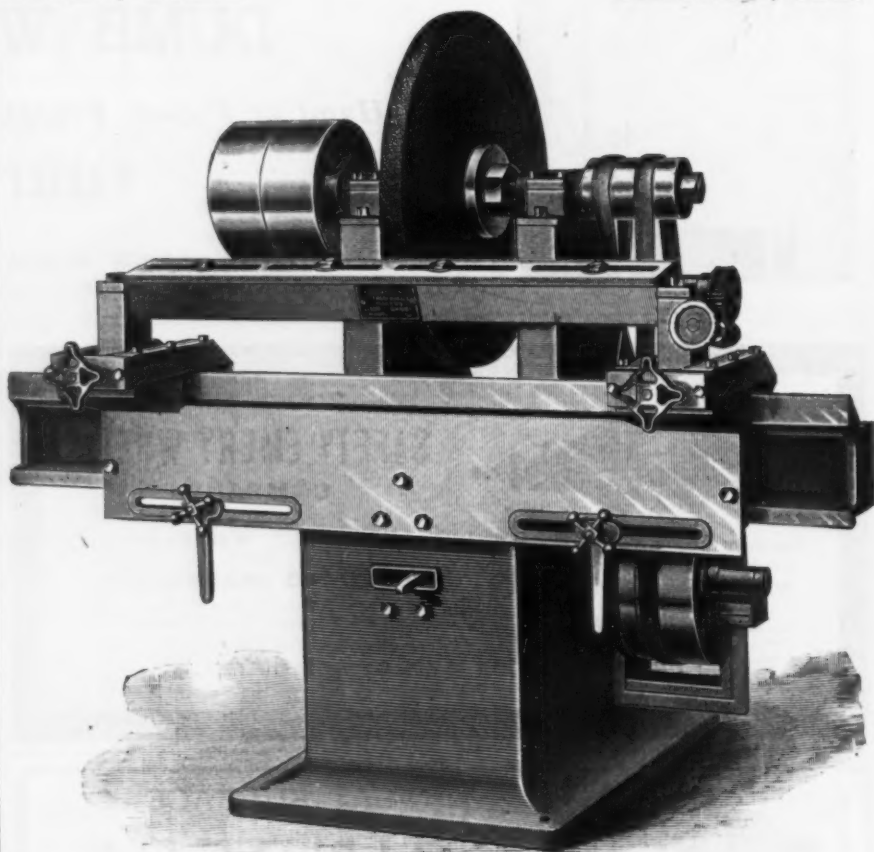
Chicago Store, 25 So. Canal St.

NORTON EMERY WHEEL CO.,
Worcester, Mass.

Northampton Emery Wheel Co.,

LEEDS, MASS.

CHICAGO, ILL.



Automatic Knife Grinders of Any Length; and with either
Plain or Cup Wheels.

**DIAMOND TOOLS FOR DRESSING, TURNING AND
SHAPING EMERY WHEELS.**

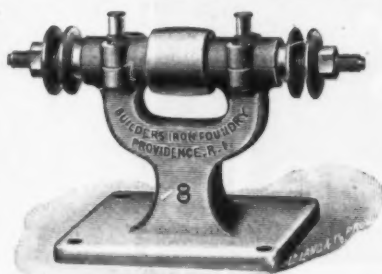
(Carbon, Black Diamond.)



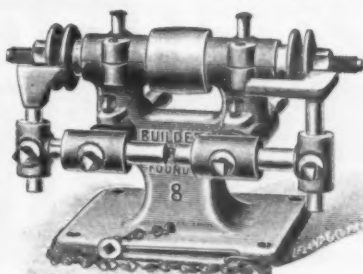
SEND FOR
NEW DESCRIPTIVE
CATALOGUE AND PRICE-LIST.

THOS. L. DICKINSON,
45 Vesey Street, New York City, U.S.A.

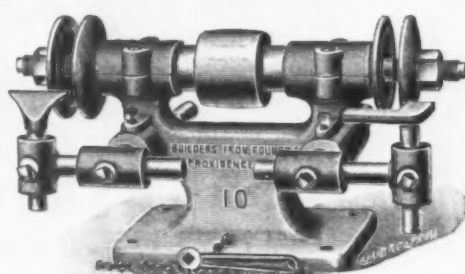
GRINDING MACHINERY.



8 inch Grinder Head.

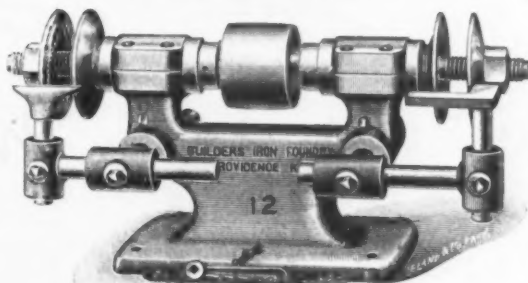


8 inch Grinder Head with Rests.



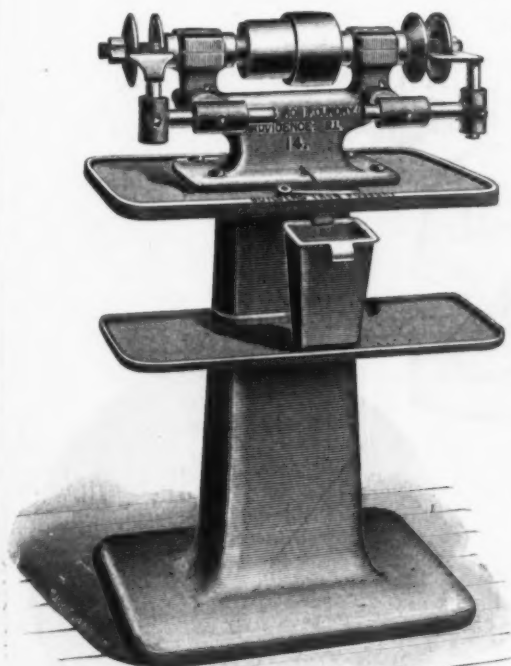
10 inch Grinder Head.

Surface Grinding Attachments are furnished, when ordered, for the 12, 14, 16, and 18 inch Grinders.

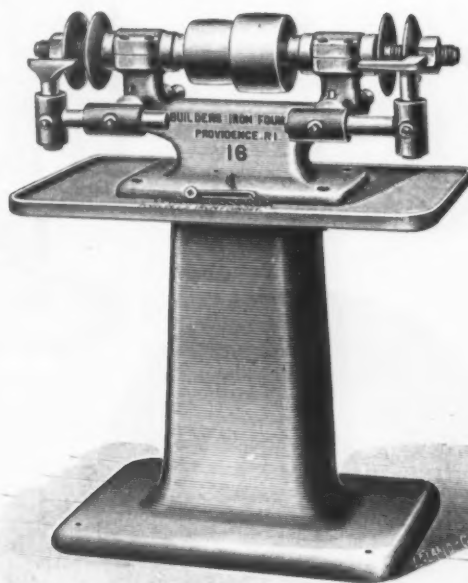


Water Attachments are furnished, when ordered, for the 12 and 14 inch Grinders

12 inch Grinder Head.

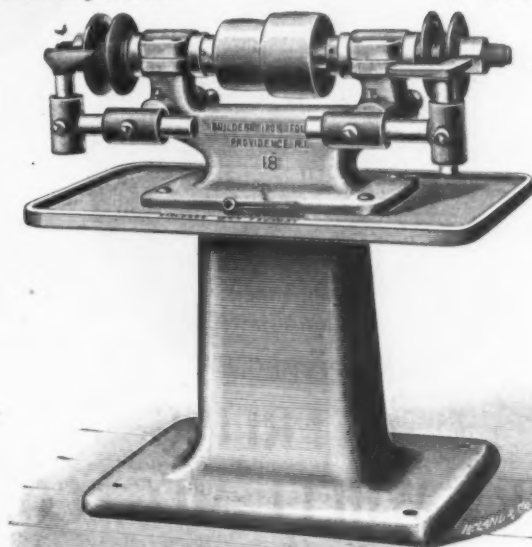


14 inch Grinder Head on Column.



16 inch Grinder Head on Column.

Our purpose is that our machines shall be the best of their class.



18 inch Grinder Head on Column.

All sizes listed in catalogue are ordinarily carried in stock.

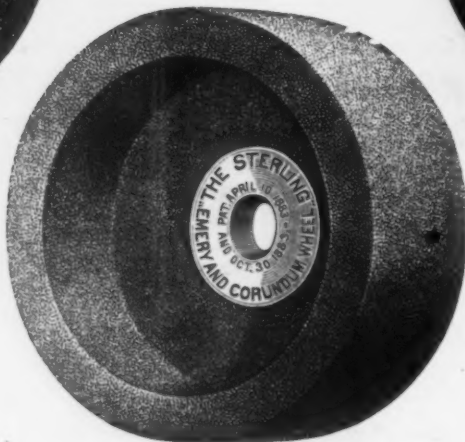
BUILDERS IRON FOUNDRY, Providence, Rhode Island, U. S. A.

Sterling Emery Wheels

SAFE,
EFFICIENT,
ECONOMICAL,



Why
Experiment?



EUROPE.

London, England,
C. W. Burton, Griffiths & Co.

Paris, France,
Burton Fils.

Zurich, Switzerland,
A. Bannwart.

Milan, Italy,
Carlo Naef.

Berlin, Germany,
E. Wilczynski.

Amsterdam, Holland,
H. Elles, Jr.
Vienna, Austria.

Stockholm, Sweden.

THE STERLING EMERY WHEEL MFG. CO.

TIFFIN, OHIO, U. S. A.

CATALOGUES MAILED FREE.

UNITED STATES.

Chicago, Ill.,
Sterling Emery Wheel
Mfg. Co.

New York, N. Y.,
L. Best.

Boston, Mass.,
Cutter, Wood & Stevens Co.

Cleveland, Ohio,
The Geo. Worthington Co.

Pittsburg, Pa.,
Somers, Fittler & Clarke, Ltd.

San Francisco, Cal.,
Parke & Lacy Co.

Indianapolis, Ind.,
Minneapolis, Minn.,
Memphis, Tenn.,
Atlanta, Ga.,

E. C. Atkins & Co.

For Tool Grinding

For Saws & Knives

AMERICAN EMERY WHEELS

For Foundry Use

For Wrought Iron & Steel

Manufactured by the AMERICAN EMERY WHEEL WORKS, Providence, R. I.

POROUS EMERY WHEELS

may be called self-sharpening files. Vitrified Emery Wheels are porous and cut as free when nearly used up as when first put in use.

SEND FOR CATALOG.

VITRIFIED EMERY WHEEL CO., Westfield, Mass., U. S. A.

DON'T

BUY WHEELS



WHICH ARE NOT well made and properly balanced.
WHICH ARE NOT strong and thoroughly tested at high speed.
WHICH wear away quickly without doing much work.
WHICH are made from cheap abrasives which will not cut.

If you desire wheels which are satisfactory in the above respects,

BUY STAR WHEELS.

They are the Best in All Respects.

Send for Illustrated Catalogue and Price List.

MANUFACTURED BY

THE STAR CORUNDUM WHEEL CO.,
Emery Wheels and Grinding Machinery, DETROIT, MICHIGAN.

THE IDEAL
BEVEL GEAR.

BETTER THAN CORE WHEELS.

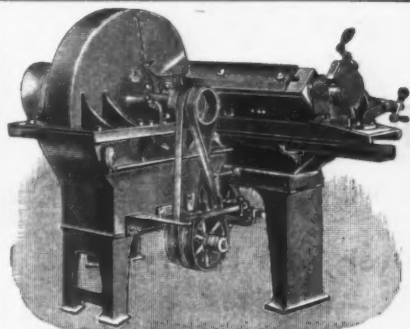
GEAR PATTERNS

OF EVERY SIZE
AND DESCRIPTION.
CUT BY MACHINERY.
PERFECT WORK AT REDUCED COST.

Buffalo Gear & Pattern Works,

F. H. SCHORN, Prop.,

18 and 20 Elk St., - BUFFALO, N. Y.



Bridgeport Safety Emery Wheel Co.,
BRIDGEPORT, CONN., U. S. A.

Patentees and manufacturers of Emery Wheels
and Emery Wheel Machinery. Send for prices.

HEARTLEY MACHINE, VARIETY IRON AND TOOL WORKS,

MANFRS. OF

HEARTLEY'S STEEL TRUSS BRACE EAVE TROUGH HANGER.

Saves 4 lbs. of solder and one half day's labor on each
gutter used. We also make the Baker & Woodruff
Hangers, Conductor Hooks, Ice Tongs and Tools.

Special Machinery and Tools for patent specialties and novelties, Bicycle and Metal Wheel

Tools.

POWER AND HAND PUNCHING AND

SHEARING MACHINERY.

Presses, Punches, Dies and Tools for

sheet metal stamping and forming, etc.

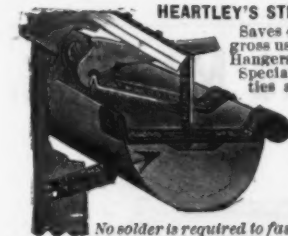
GEO. W. HEARTLEY, Proprietor,

Jobber in Eaves Trough, Conductor Pipe

and Tinner's Trimmings.

901, 900, 808 Water Street,

TOLEDO, OHIO, U. S. A.



No solder is required to fasten the Cross-Bar to this Eaves Trough

THE LATEST
AND BEST IMPROVED
PUNCH AND SHEAR

WE GUARANTEE easier and quicker work done in
drilling, tapping, reaming, etc., by the use of
our Flexible Shaft and Portable Tools
together with the

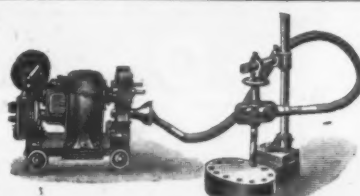
ELECTRIC MOTOR of the GENERAL ELECTRIC CO.,
than by any other method.

STOW FLEXIBLE SHAFT CO.,

26th and Callowhill Sts., Philadelphia.

Frederic Schoff, Proprietor.

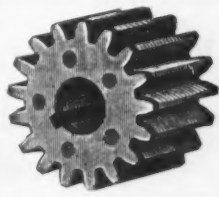
Catalogue 5 Free



RAWHIDE GEARS.

MANUFACTURED BY

Horsburgh & Scott,
CLEVELAND, OHIO.



C. H. Condrey Machine Works.

GOVERNMENT CONTRACTORS

MACHINISTS

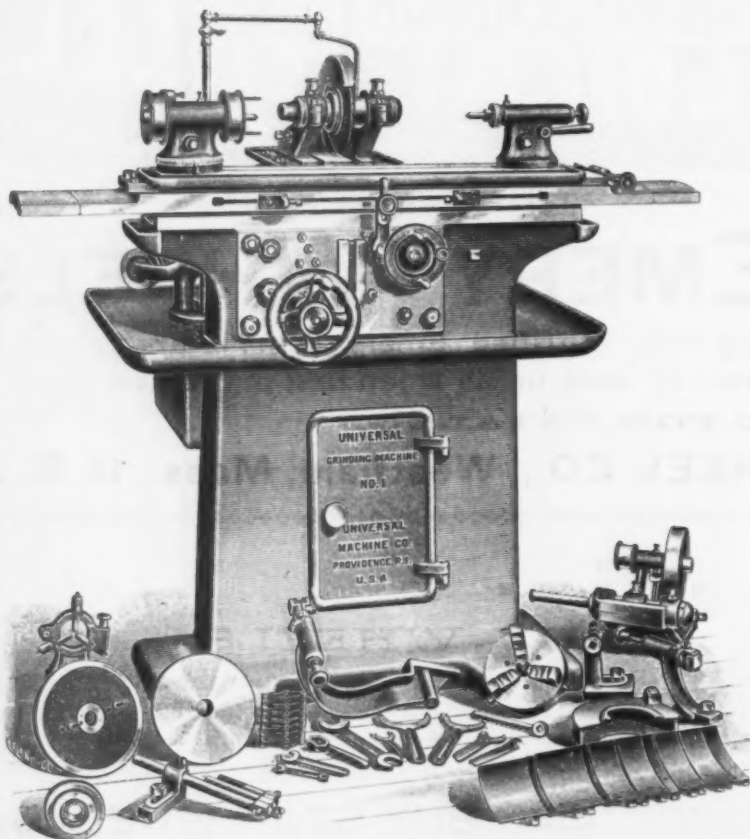
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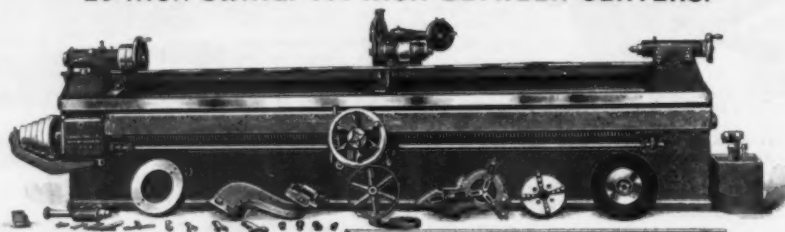
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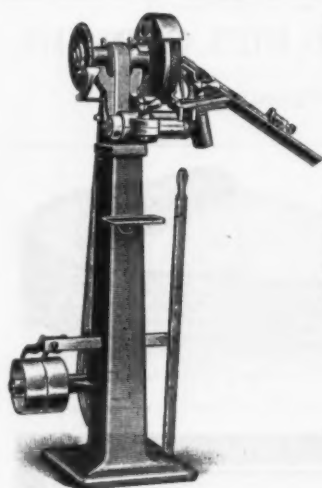
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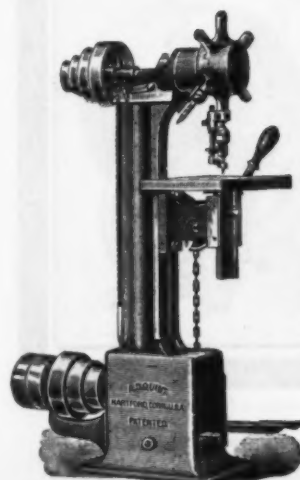
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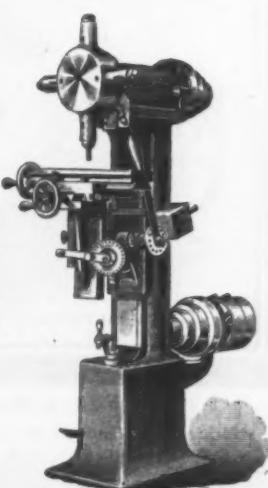
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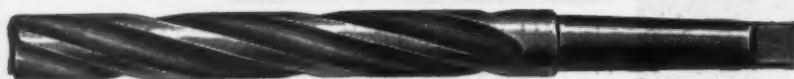
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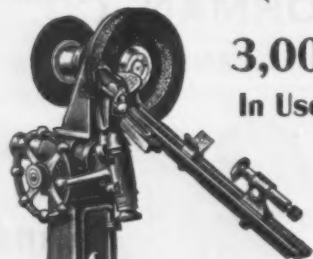
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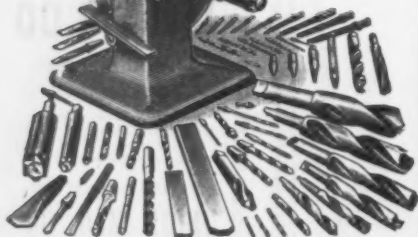
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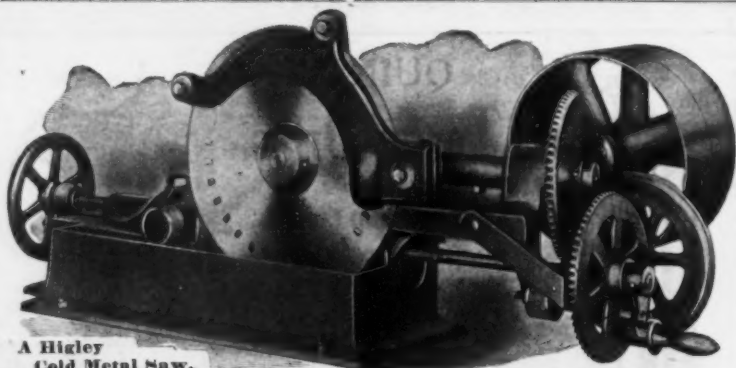
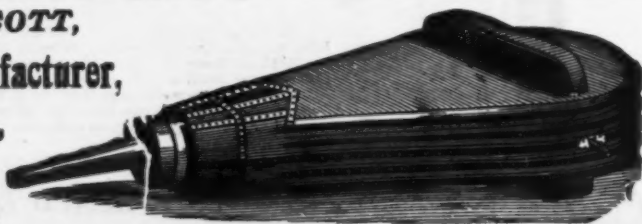
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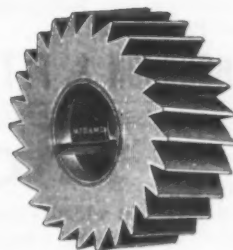
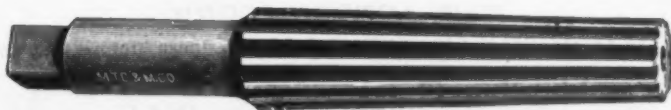
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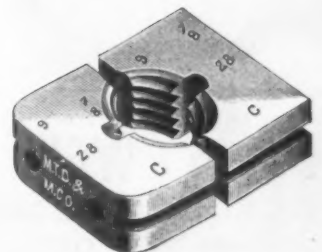
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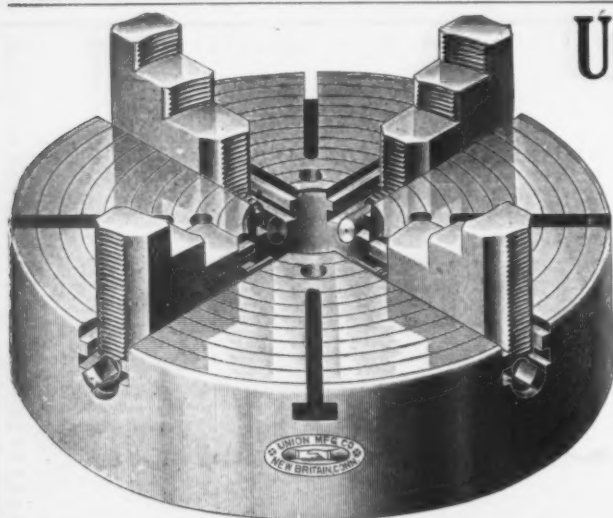


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MADE IN THE FOLLOWING SIZES:

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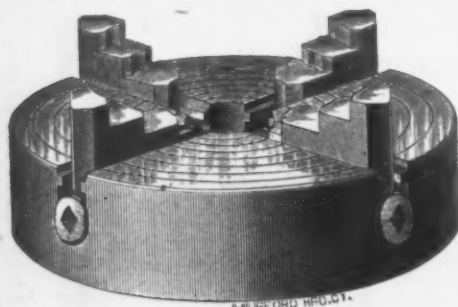
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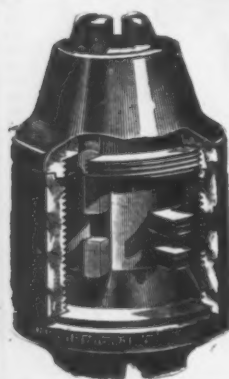


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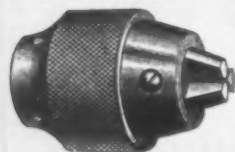
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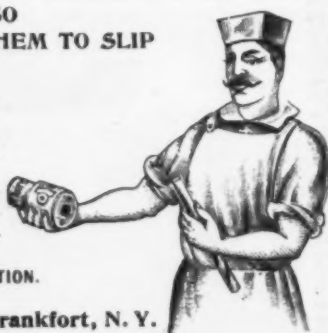
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How well it has qualified is borne out by every user. Its construction is such that a little dog floats on top of the jaws, holding the flat end of the drill so the drill cannot slip.

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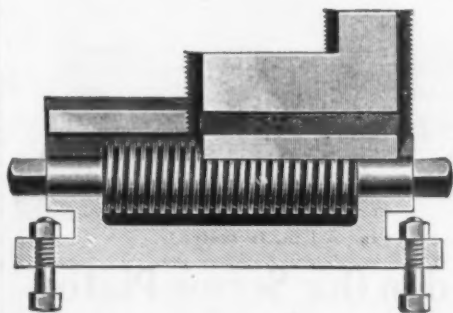
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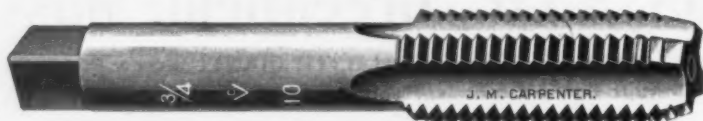
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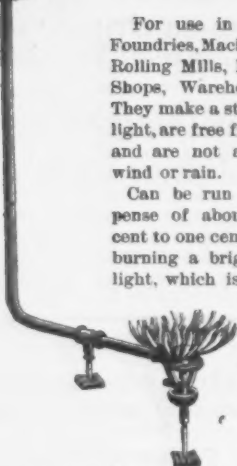
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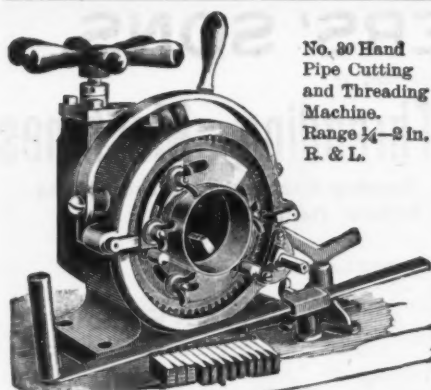
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Range $\frac{1}{4}$ —2 in.
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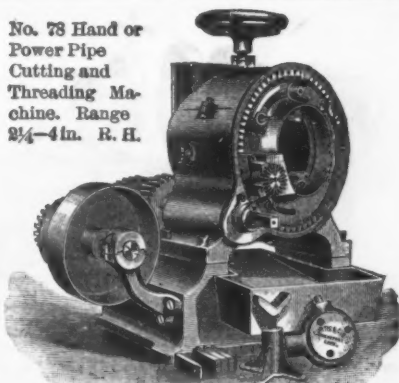
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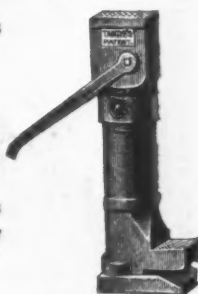
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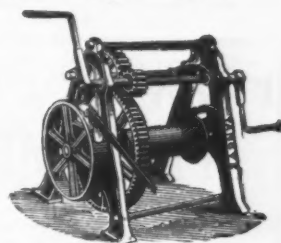
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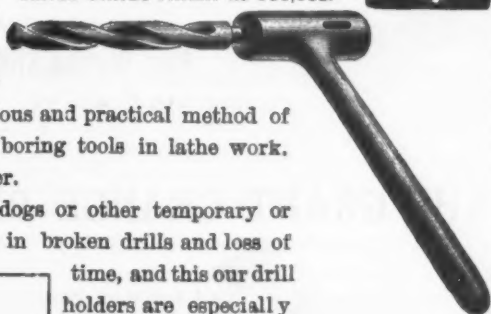
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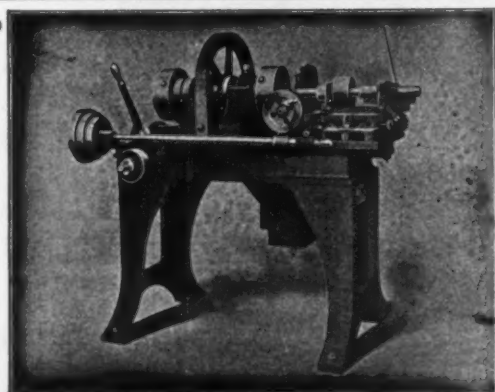
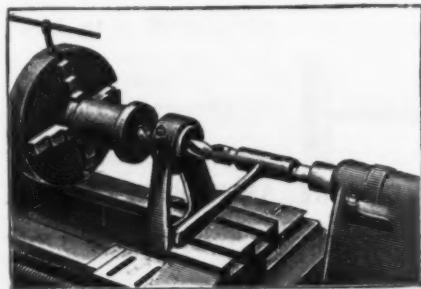
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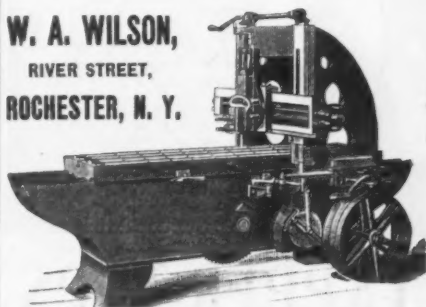


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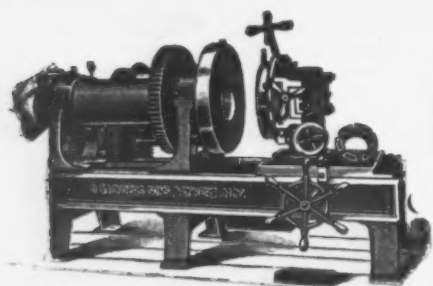
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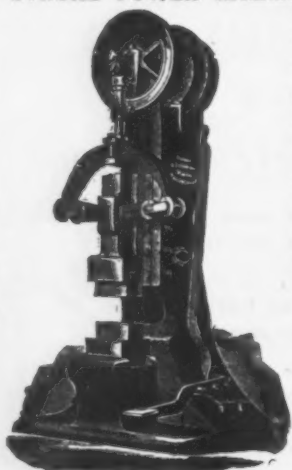
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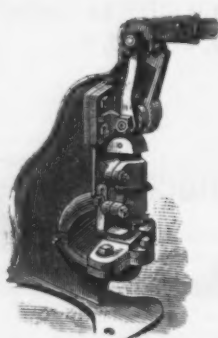
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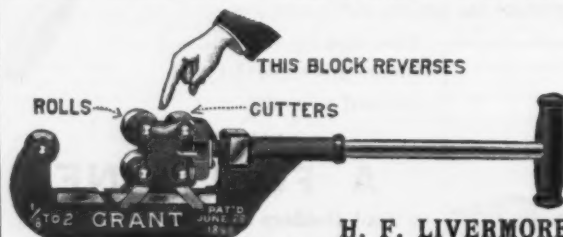
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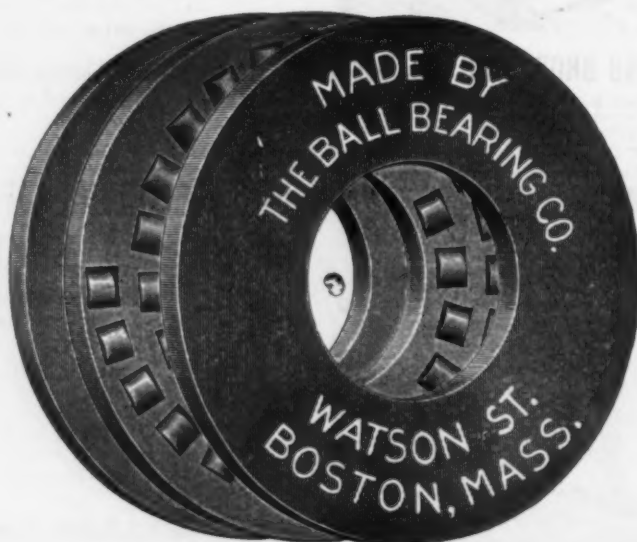


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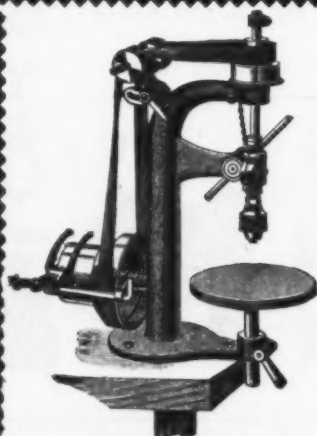
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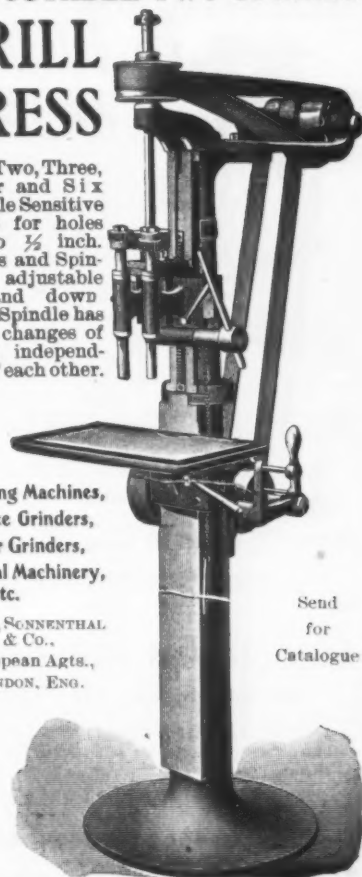
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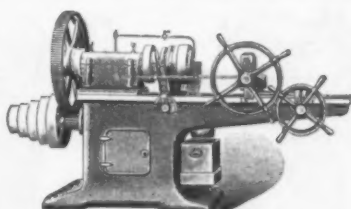
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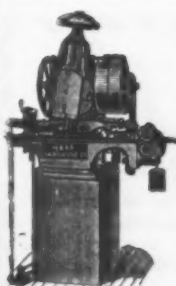
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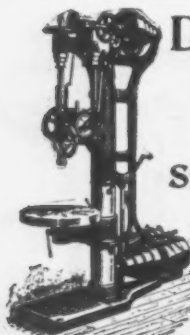
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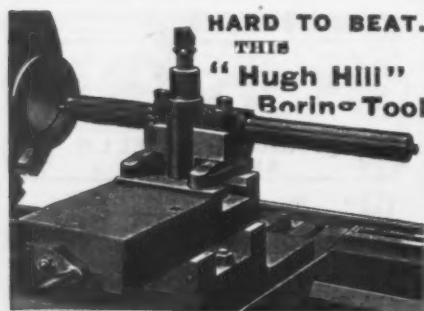
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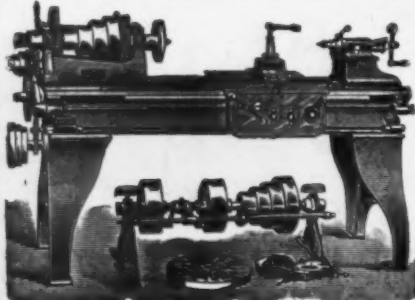
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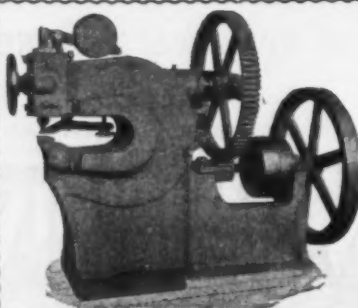
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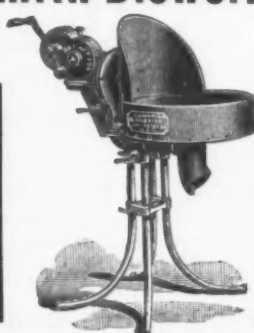
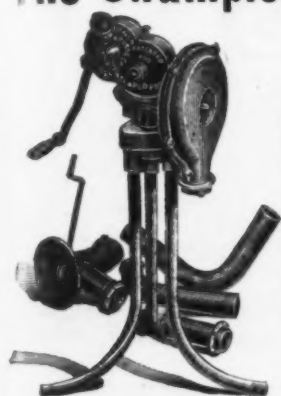
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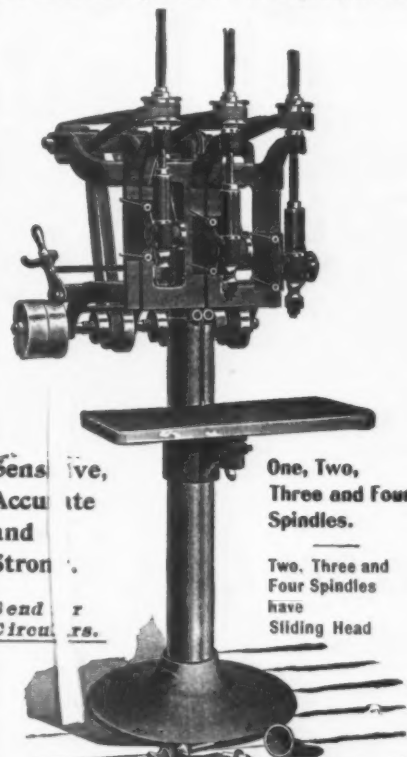
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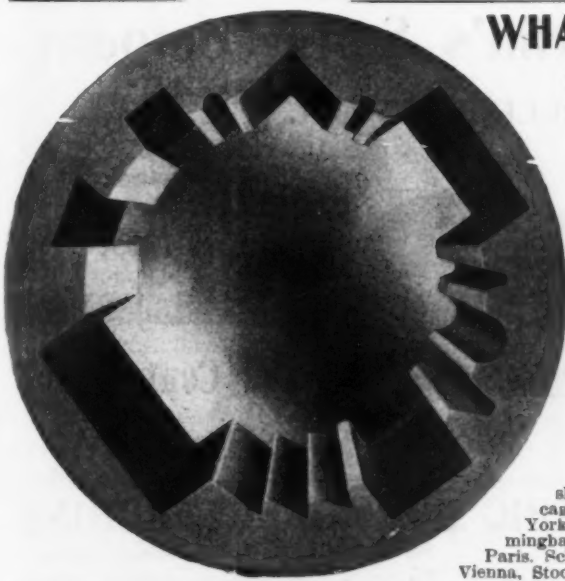
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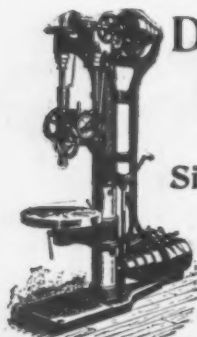
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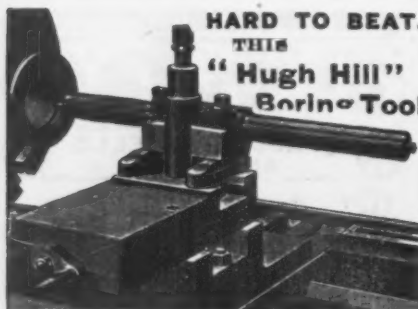
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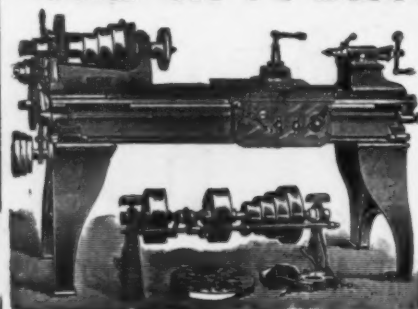
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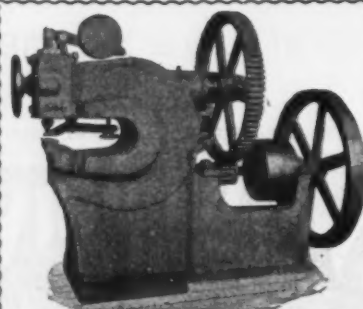
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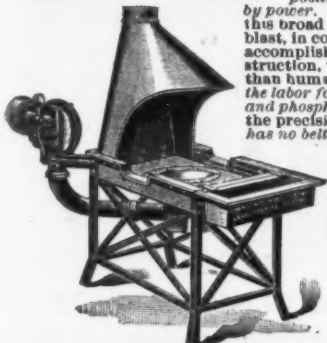
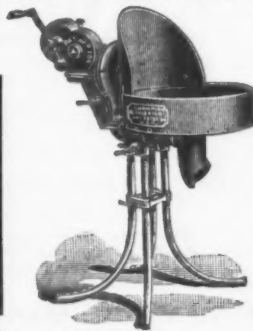
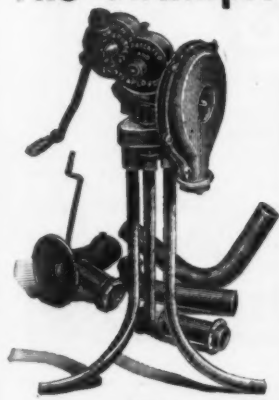
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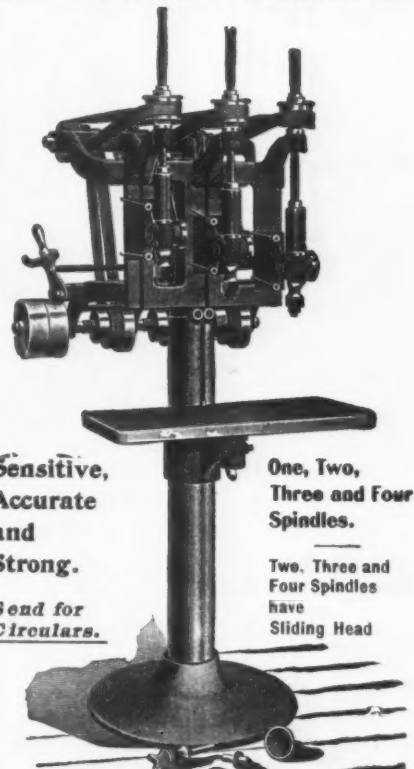
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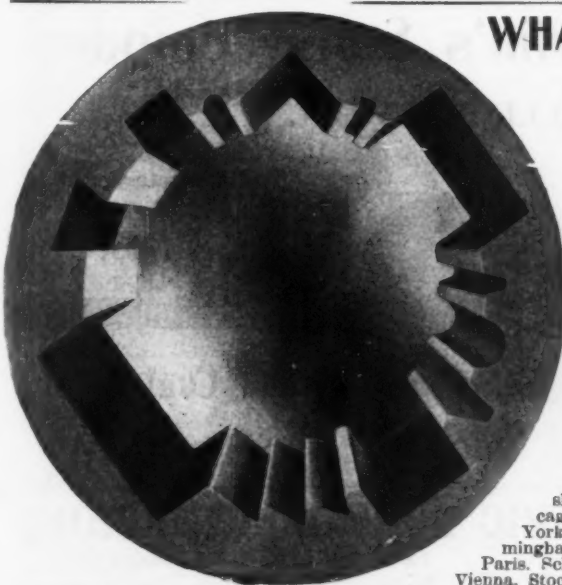
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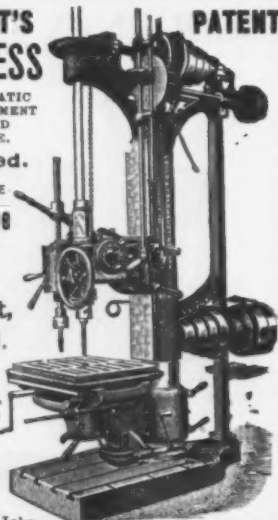
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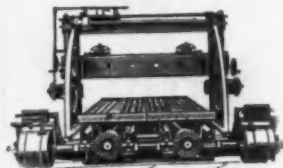
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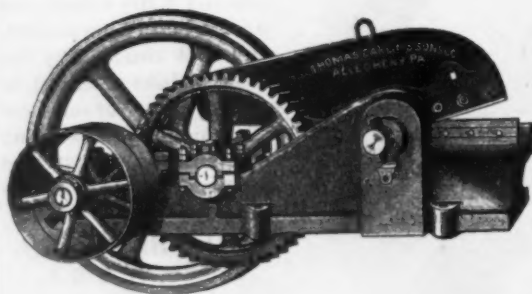
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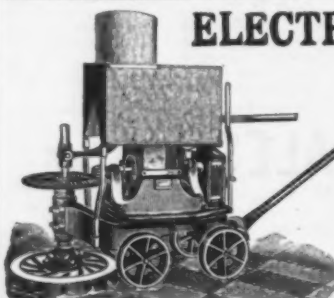
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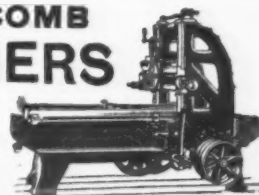
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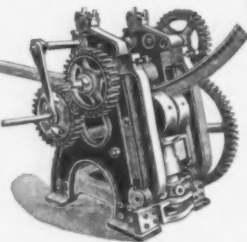
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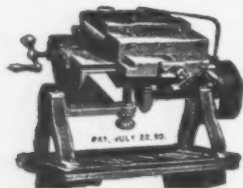
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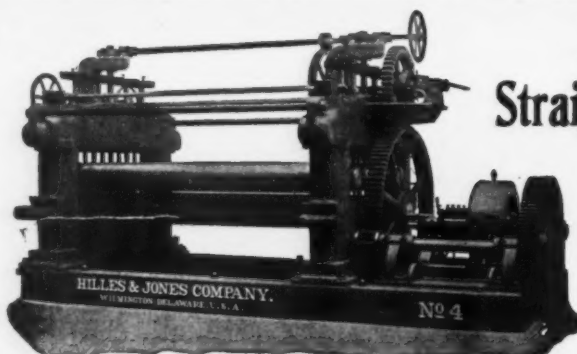
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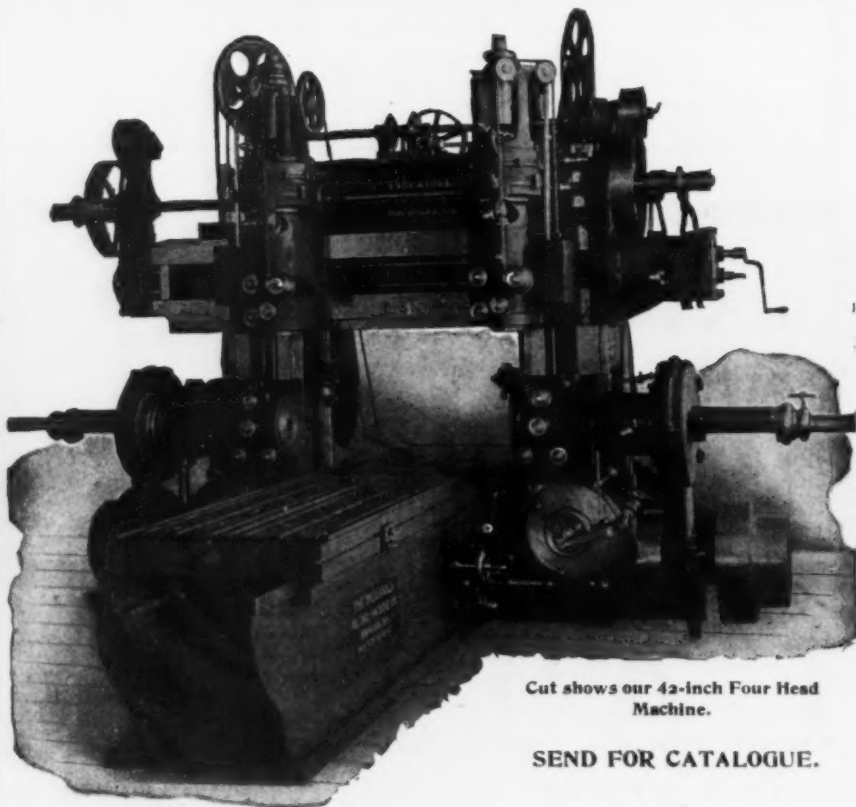
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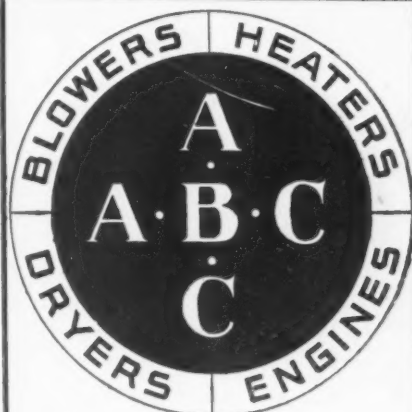
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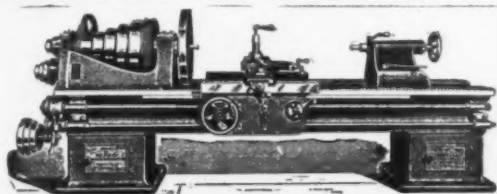
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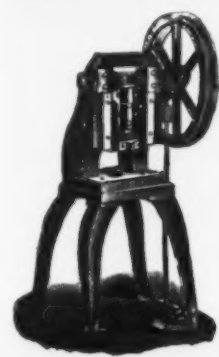
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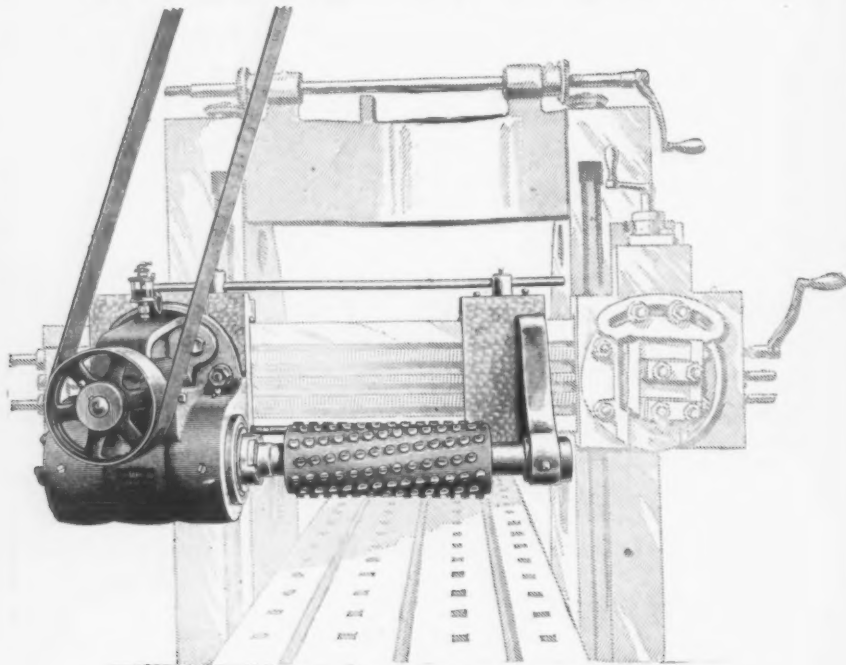
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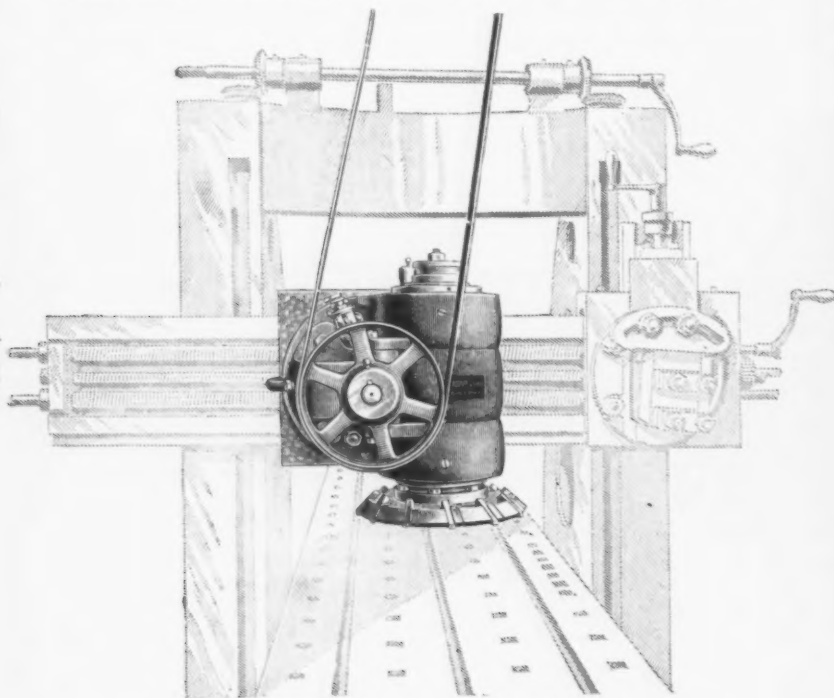
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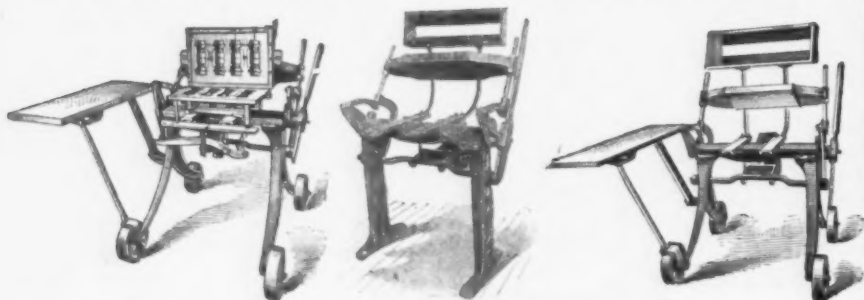
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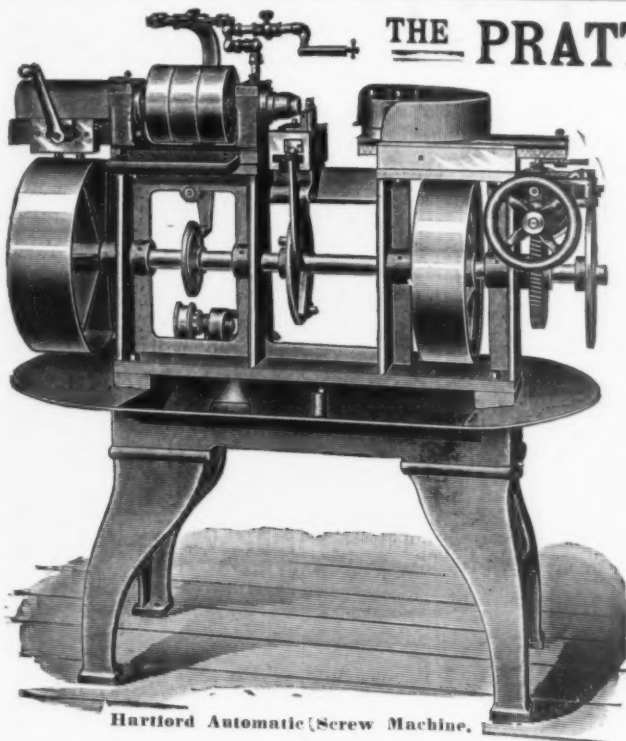
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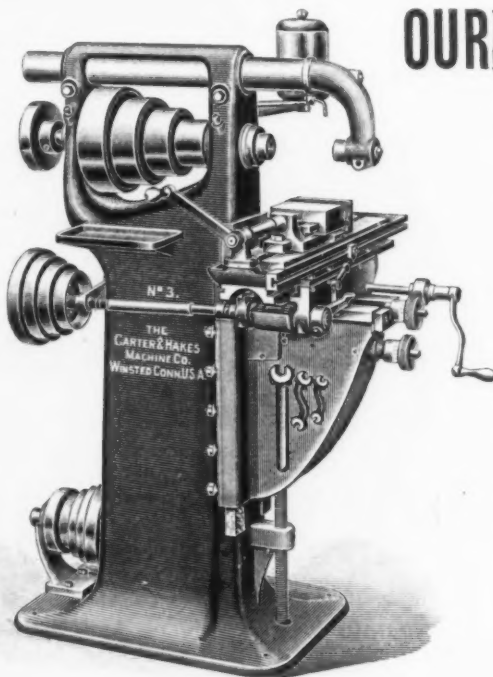
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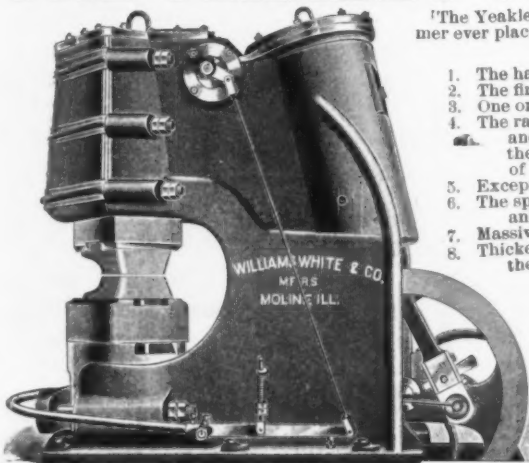
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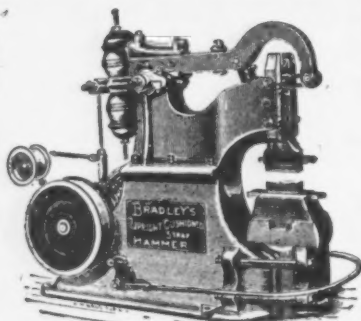
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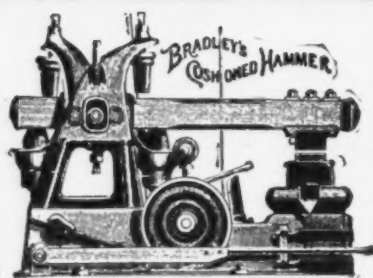
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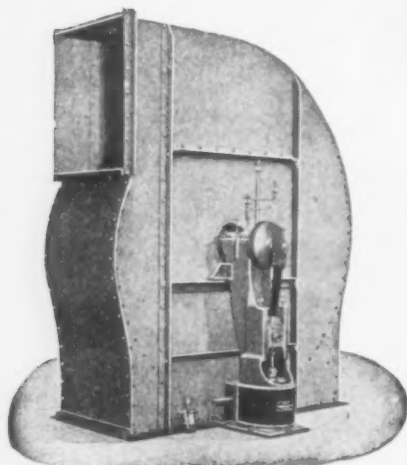
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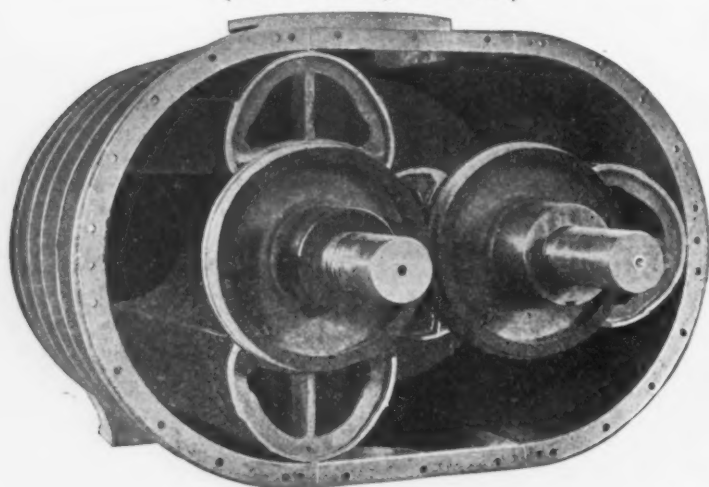
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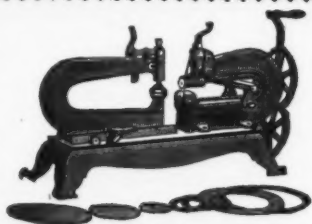
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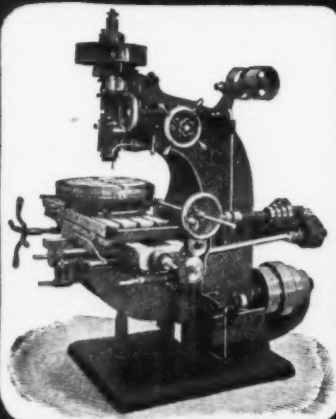
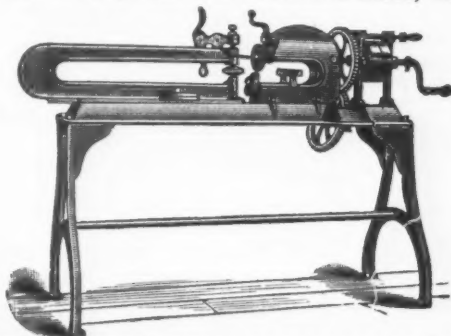
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 No. 16 " " No. 14 " " " " 6 to 60 " "

MADE BY

Niagara Machine & Tool Works,
BUFFALO, N. Y.

Manufacturers of Sheet Metal Tools.

Write for Catalogue.



BECKER
VERTICAL MILLING-
MACHINE PRACTICE

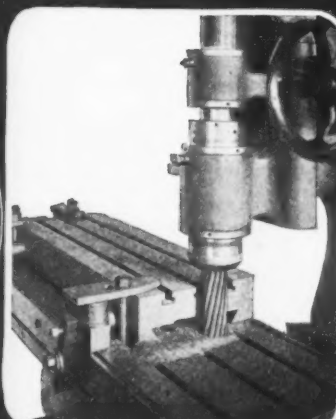
Side mill finishing ends of milling machine table. Economy compared with planer, three to one. Large planer would be required in order to pass casting between housings

Other examples in our "Object Lessons," Free!

BECKER-BRAINARD
MILLING MACHINE CO.

HYDE PARK, MASS.

- 62 -



PORTABLE POWER TOOLS.

DUPLEX
BOILER SHELL
DRILL.

(ELECTRIC)

Electric Portable Drills.

Electric Furnace Mouth Drills.

ELECTRIC HORIZONTAL TRUCK
DRILLSElectric Portable Horizontal Drilling
and Boring Machines.

PORTABLE ELECTRIC WOOD PLANERS.

Pneumatic Chipping and Rivet-
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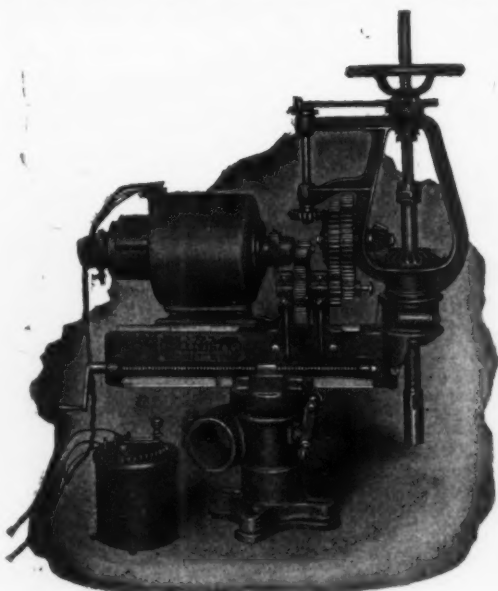
&c., &c., &c.

SEND FOR CATALOGUE.

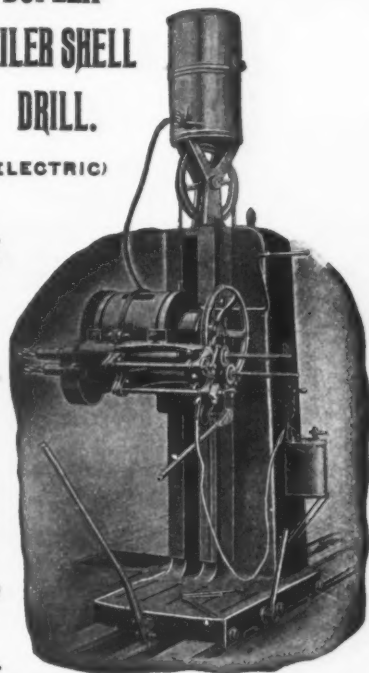
Thos. H. Dallett & Co.,

York St. and Sedgley Ave.,

PHILADELPHIA, PA., U. S. A.



Electric Portable Drill.



Pittsburgh Shear Knife
and Machine Co.,

47th St. & A. V. Ry.,
 PITTSBURGH, PA.

Solid Steel
Shear Knives

OF EVERY DESCRIPTION.

Forgings,
 Rough Turned or
 Finished Complete.
 Steam Hammers,
 Punches and Shears,
 Special Machinery.

24-inch SHAPER.

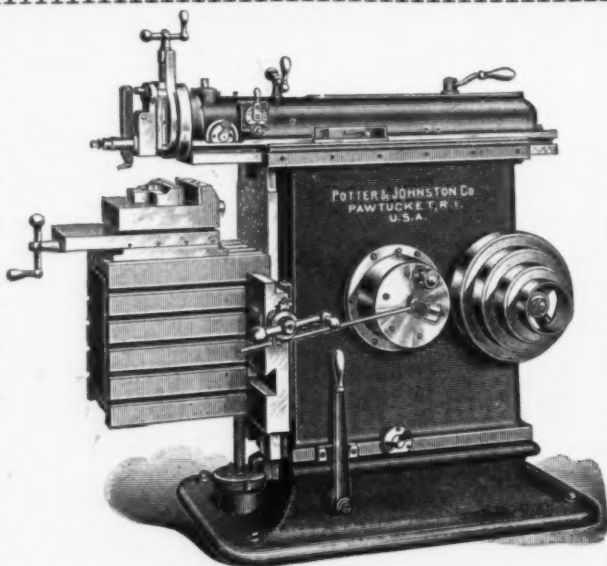
This 24-in. Shaper has power down feed on any angle. Automatic stop to down feed. Table raised and lowered by power.

Send for complete description of this machine. Write for particulars of DOUBLE TURRET MANUFACTURING LATHE AND SIMPLEX AUTOMATIC.

Potter & Johnston Company,

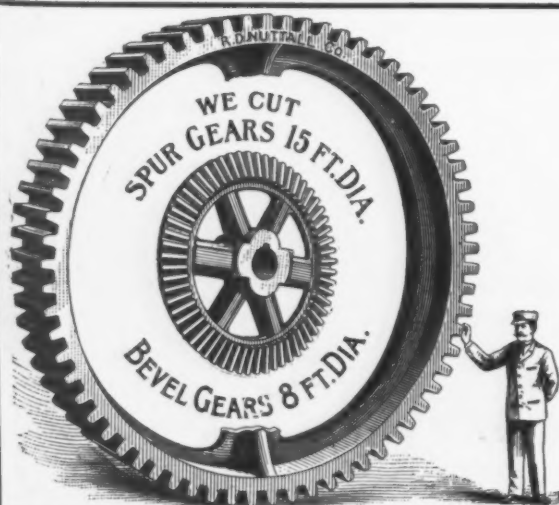
PAWTUCKET, R. I., U. S. A.

New York Office, 126 Liberty St., - Walter H. Foster, Manager.



FOREIGN AGENTS:

Chas. Churchill & Co., London, Birmingham and Manchester, England, and Glasgow, Scotland. Gustav Diechmann & Sohn, Berlin, Germany. Adolphe Janssens, Paris, France, and Brussels, Belgium. V. Lowener, Copenhagen, Denmark, and Stockholm, Sweden.

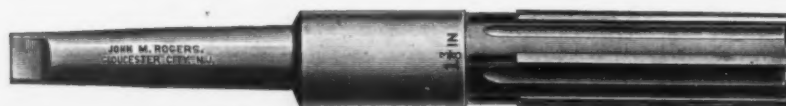
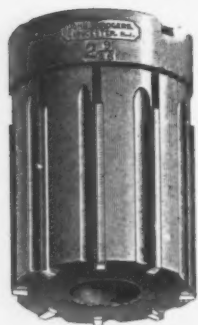


R. D. NUTTALL COMPANY,
PITTSBURGH, PA.

GEAR CUTTERS.

Solid Adjustable Reamers

Made in four styles and all sizes.



Write for our new Tool Catalog No. 6.

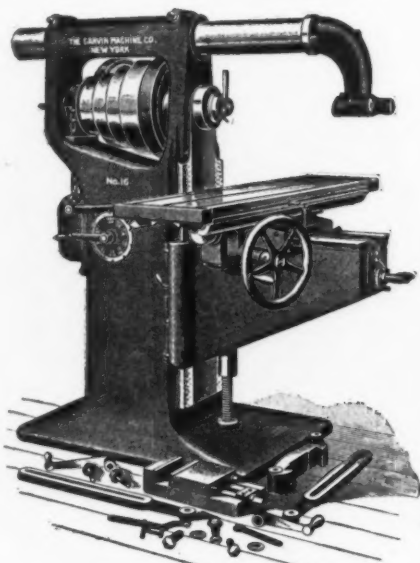


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Gloucester City, New Jersey, U. S. A.

IN STOCK FOR IMMEDIATE DELIVERY.

Points of Advantage!



No. 16 PLAIN MILLER.

Nine Instant Changes of Feeds,
Elevating Screw Not Passing
Through the Floor,
Draw in Arbor,
Extra Length of Slide Bearing,
No Overhanging Brackets.

THE GARVIN MACHINE CO.

Spring and Varick Sts., - - NEW YORK

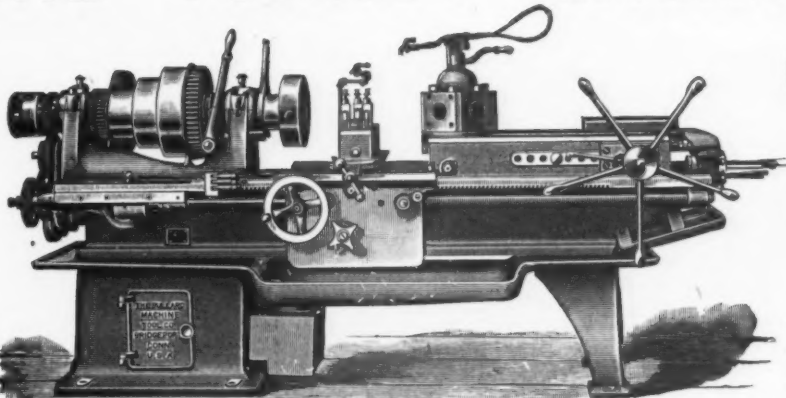
SALES AGENTS: The Garvin Machine Co., 51 North Seventh St., Philadelphia, Pa. Manning, Maxwell & Moore, 22 South Canal St., Chicago, Ill. Deutsche Garvin Maschinen-Fabrik Aktiengesellschaft, 17 Burg Strasse, Berlin, C. C. W. Burton, Griffiths & Co., Ludgate Square, Ludgate Hill, London, E. C., Eng. Montgomery & Co., 25 Boulevard Magenta, Paris, France.

BULLARD TURRET MACHINE H.

FRICTION CLUTCH
HEAD. ADJUSTABLE
STOPS. FINE FEED
ATTACHMENT.

Ready for prompt
shipment.

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OUR BORING AND
TURNING MILLS
ARE
THE STANDARD.

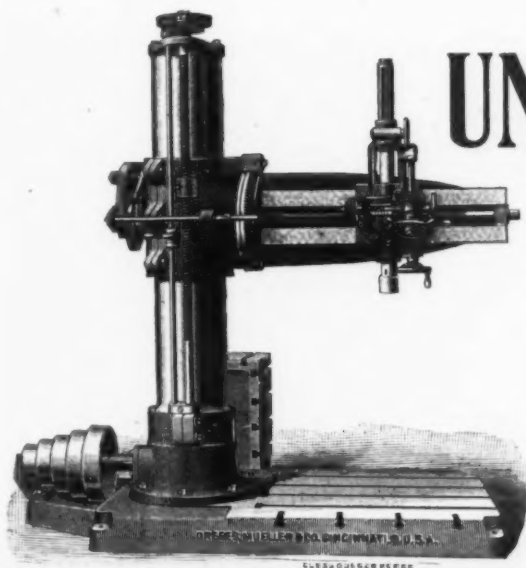
Every wide awake
manufacturer should
write for our Cata-
logue A.

BULLARD MACHINE TOOL CO., - - Bridgeport, Conn., U. S. A.

M ARSHALL & HUSCHART MACHINERY CO., Chicago, Cleveland and Cincinnati. SCHUCHARDT & SCHUTTE, Berlin, Vienna, Cologne, Stockholm and St. Petersburg.
ADOLPH JANSSENS, Paris. CHARLES CHURCHILL & Co., Ltd., London, Birmingham, Manchester and Glasgow.

HALF AND FULL

UNIVERSAL RADIALS



Entirely operated by one lever always in reach
of the operator.

Tapping Attachment embodied in the construc-
tion. No extra charge for it.

DRESES, MUELLER & CO. CINCINNATI, OHIO, U. S. A.

Manning, Maxwell & Moore, New York, Pitts-
burgh, Chicago.
Pacific Tool & Supply Co., San Francisco.
Niles Tool Works Co., Boston.
Selig, Sonnenthal & Co., London
E. Sonnenthal, Berlin.

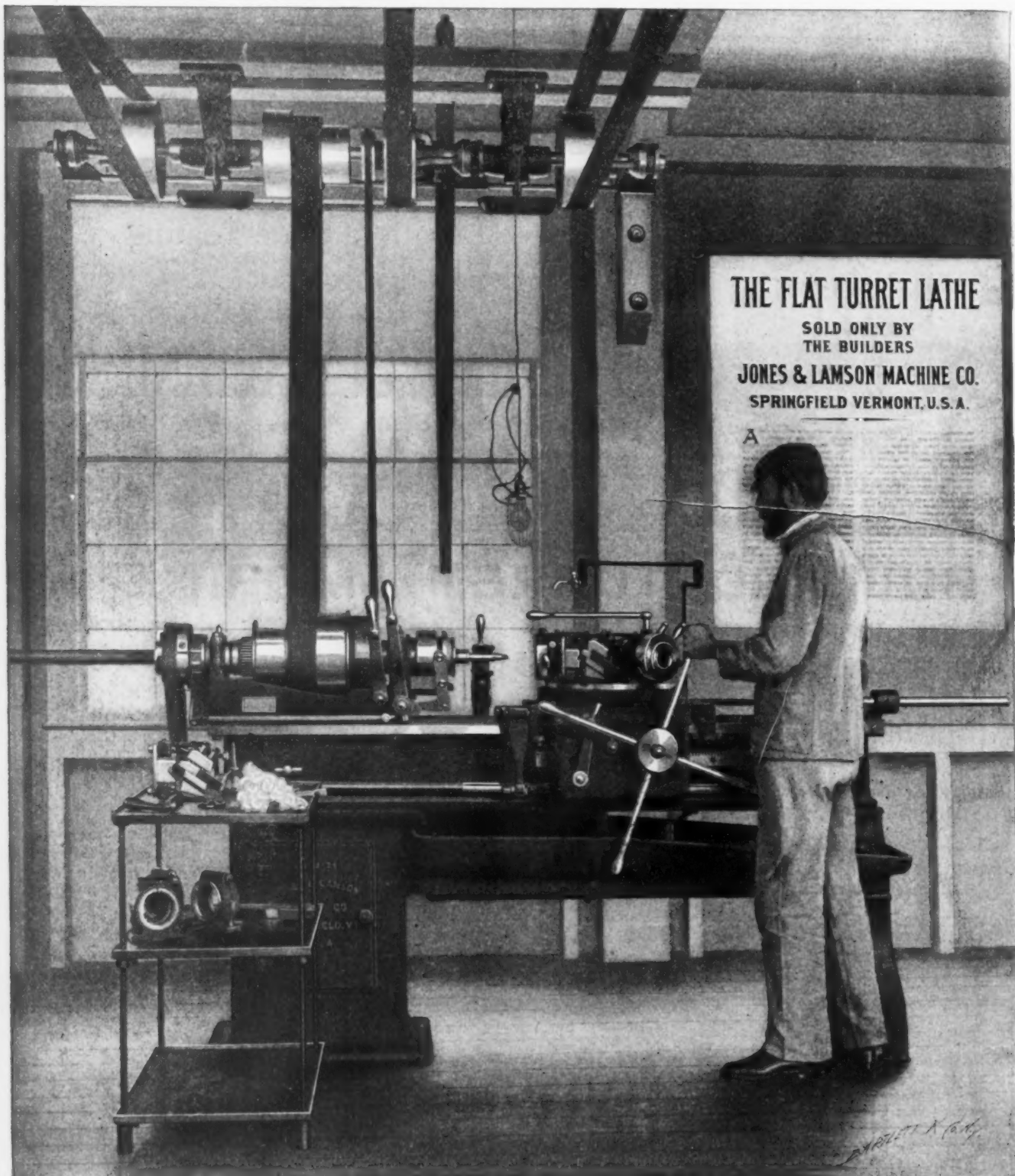
C. Schinz, St. Petersburg.
G. Koppen & Co., Moscow.
V. Löwen, Copenhagen and Stockholm.
Van Rietschoten & Houwens, Rotterdam.
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Stüssi & Zweifel, Milan, Italy.

Remember

the Flat Turret Lathe is provided with an outfit of tools for nearly every conceivable shape within its capacity.

That it turns all diameters under two inches, and any length under twenty-four inches.

That it is ready to go to work in any shop as soon as belts are put on.

**Remember**

that over fifteen hundred Flat Turret Lathes are running to-day, all alike in size and design, and where there is a place for three engine lathes on work under two inches diameter, whether it is only one fourth of an inch long, or twenty-four inches, there is a place for this machine—and a saving of from \$600 to \$1,500 per year in the cost of the work can be made

SOLD ONLY BY

Jones & Lamson Machine Co.,
Springfield, Vermont, U. S. A.

English Office: Jones & Lamson Machine Co., Exchange Buildings, Stephenson's Place Birmingham, Eng.
 Germany, Holland, Belgium, Switzerland, Austria-hungary and Italy: M. KOYEMANN, Charlottenstrasse 112, Düsseldorf, Germany.
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SPEED LATHES.



Patent Applied For.

Always in Line.

Our new tailstock provides a desirable adjustment whereby the centres are always in correct alignment.

10 x 4 Speed Lathe for Bench.

10 x 4 " " on Legs.

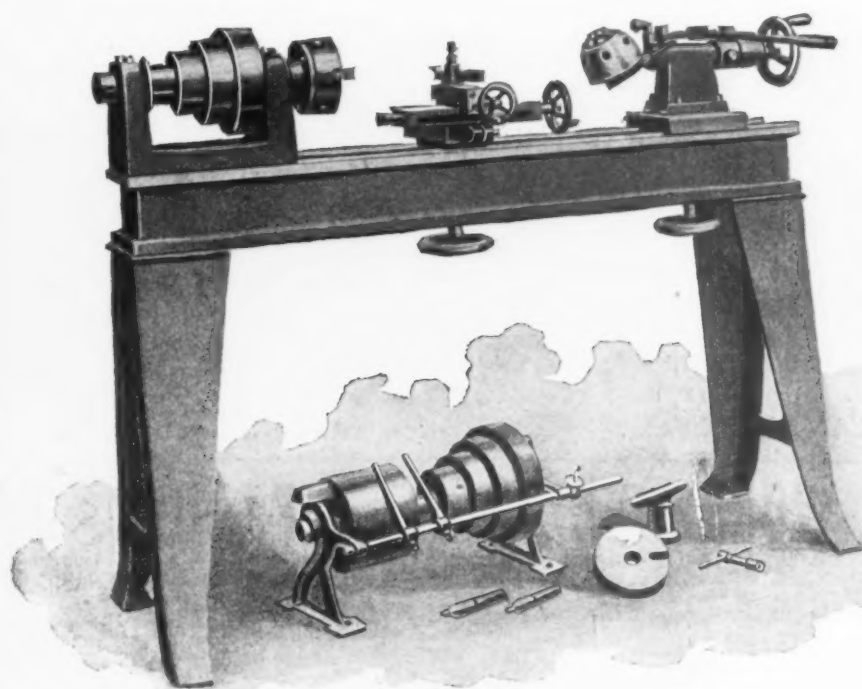
12 x 5 " " " "

12 x 6 " " " "

15 x 6 " " " "

All in Stock. ***Moderate Prices.***

With or without attachment shown in cut.



The tailstock spindle is operated by either a lever or screw feed, and a shoulder on the sleeve allows the tail spindle to be fed forward to any desired position, with the certainty of stopping at the same point each time.

Send for circular.

HILL, CLARKE & CO.,

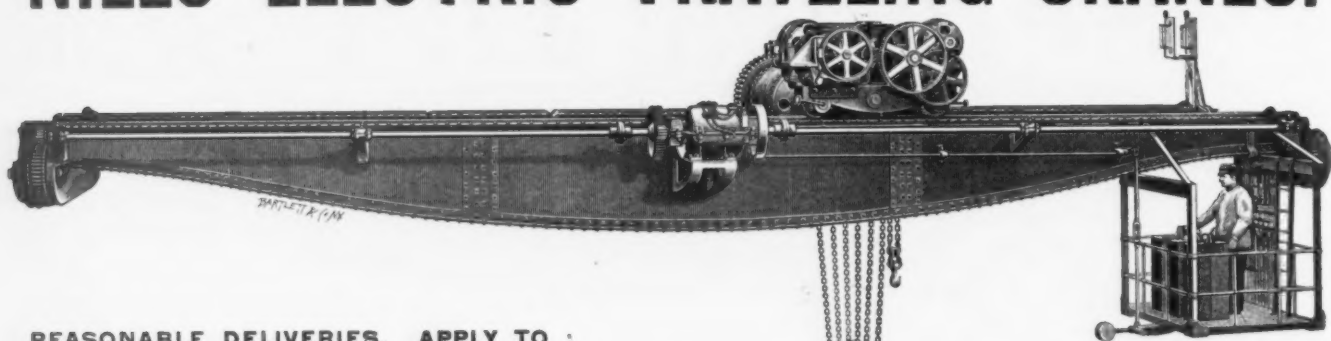
***156 Oliver St.,
Boston, Mass.***

***12 So. Canal St.,
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U. S. A

Cable address, HILCLARK, Boston.

NILES ELECTRIC TRAVELING CRANES.



REASONABLE DELIVERIES. APPLY TO

The Niles Tool Works Co.,

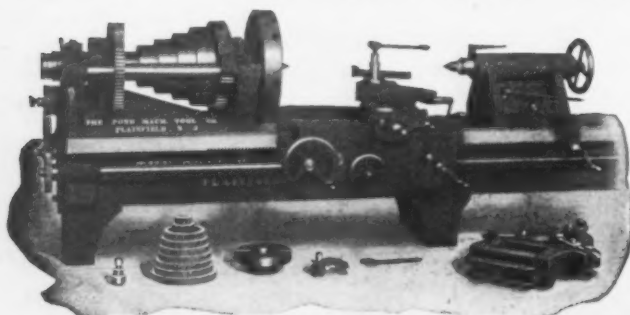
NEW YORK, 136-138 Liberty Street.
PHILADELPHIA, 21st and Callowhill Streets.
BOSTON, 65 Oliver Street.

CHICAGO, Western Union Building.
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POND MACHINE TOOL CO. - - Plainfield, N. J.

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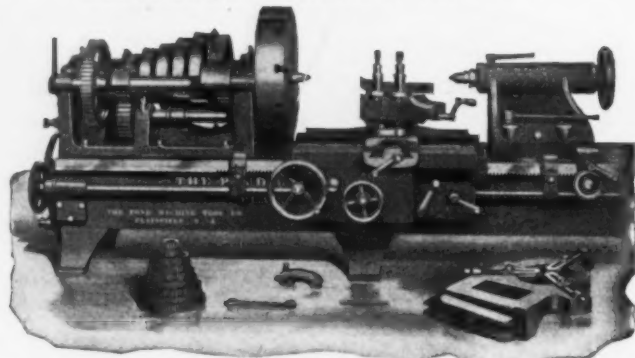
28-INCH BACK-GEARED LATHE.

AGENTS:

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OFFICES:

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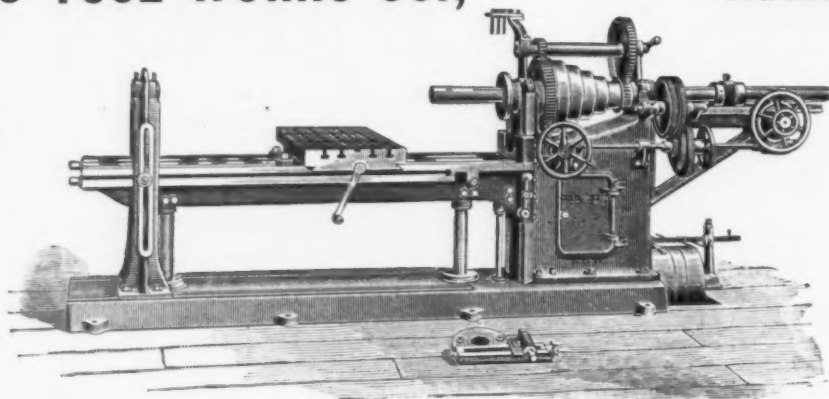
32-INCH TRIPLE-GEARED LATHE.

THE NILES TOOL WORKS CO., - - Hamilton, Ohio.

Machine
Tools.

Awarded
Grand Prize and Gold
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Exposition.

Railroad
Machinery
A Specialty.



Boring
and
Turning
Mills.

No. 3 HORIZONTAL BORING AND DRILLING MACHINE.

Offices: { NEW YORK, 136-138 Liberty St.
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LONDON, 23-25 Victoria St., S. W.

Agents: { PARIS, H. Glaenger & Perreand
COPENHAGEN, V. Lowener
STOCKHOLM, Ak. V. Lowener
BRUSSELS, Adolphe Janssens.
HELSINGFORS, Werner Hult.
ROTTERDAM, Van Rietschoten & Houwens.
JOHANNESBURG, Sheriff, Swingley & Co.

The Ajax Manufacturing Co.,

CLEVELAND, OHIO, U. S. A.

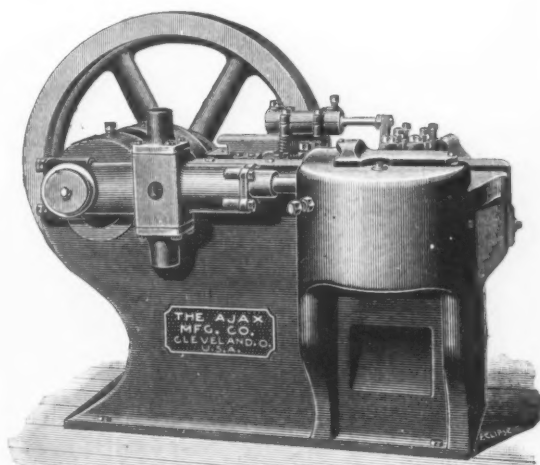
Cable Address, Ajaxco.

Lieber's Code Used.

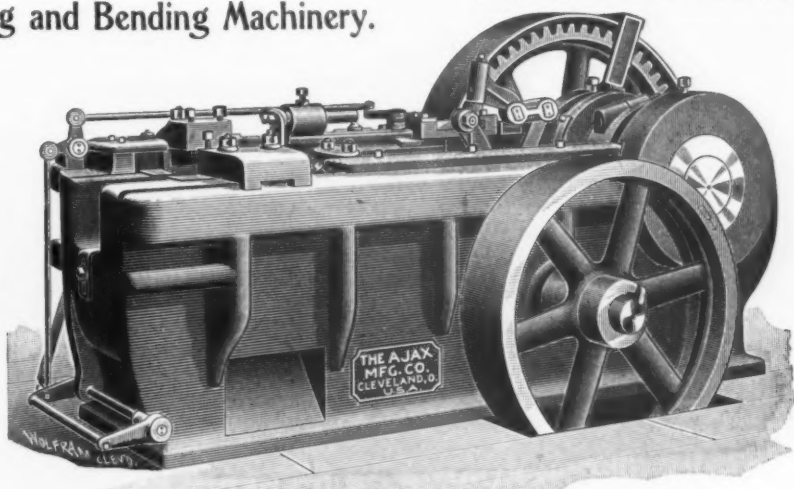
SOLE MANUFACTURERS OF

The Blakeslee Improved

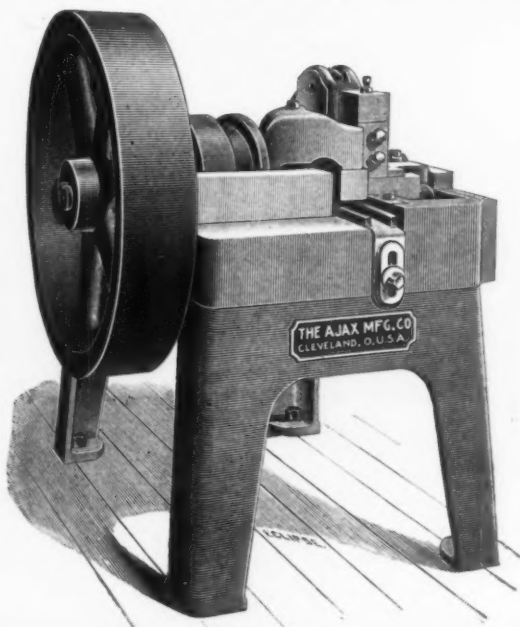
Bolt Headers, Rivet Headers,
Upsetting Machines,
General Forging Machines,
Hot Pressed and Hot Forged Nut Machines,
Bulldozing and Bending Machinery.



The Ajax 1 1-2 inch Rapid Bolt Header.



Ajax 2 1-2 inch Heading, Upsetting, and Forging Machine.



Blakeslee's Latest Improved Forge Nut Machine.

THIS is by far the simplest and strongest Nut Machine that has ever been put on the market, having less than one-third the moving parts of any other Forge Nut Machine. We make them in all sizes, ranging from $\frac{1}{4}$ inch up to and including 4 inches.

A Complete Line of UPRIGHT DRILLS

- 8 in. Bench Friction Drill.
- 10 in. Column Friction Drill.
- 20 in. Drill with or without Back-gear.
- 22 in. Drill Back gear Sliding Head.
- 22½ in. Drill with or without Back-gear.
- 25 in. Drill Back gear.
- 26 in. Drill Back-gear Sliding Head.
- 28 in. Drill Back gear Sliding Head.
- 34 in. Drill Back-gear Sliding Head.
- 42 in. Drill Back-gear Sliding Head.



Our No. 6, 22-inch Drill

WITH

Back Gear,
Sliding Head,
Automatic Stop,
Power Feed,
Combined Lever and Wheel Feed,
Plain Lever Feed.

IT MEANS

More Rapid Work,
Greater Range of Work.

THIS DRILL WILL DO THE WORK OF BOTH
A STATIONARY AND SLIDING HEAD DRILL.

SEND FOR CATALOGUE.

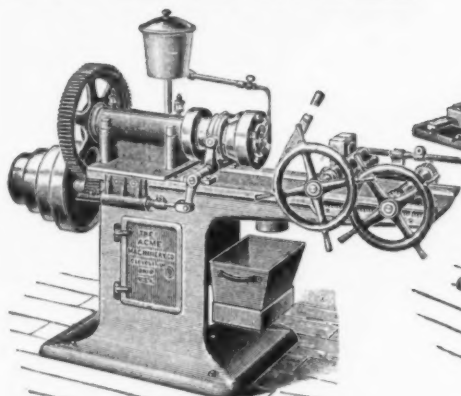
W. F. & John Barnes Co.,

Established 1872.

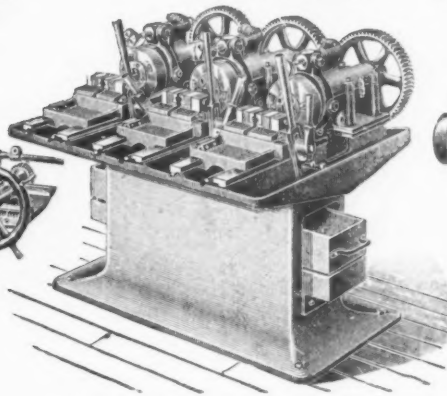
69 RUBY ST., = = ROCKFORD, ILL.

FOREIGN AGENTS—Chas. Churchill & Co., London. Fenwick Freres & Co., Paris. Gustav Diechmann & Sohn, Berlin. Fred W. Horn, Yokohama. H. P. Gregory & Co., Sydney & Melbourne. Smellie & Co., Brisbane.

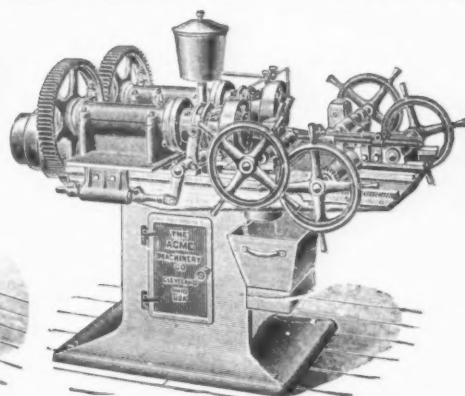
SILVER MEDAL HIGHEST AWARD IN OUR LINE PARIS EXPOSITION



ACME 1 1/4-INCH SINGLE BOLT CUTTER.
Net weight 1,750 lbs.



ACME 1-INCH TRIPLE BOLT CUTTER.
Net weight 3,000 lbs.

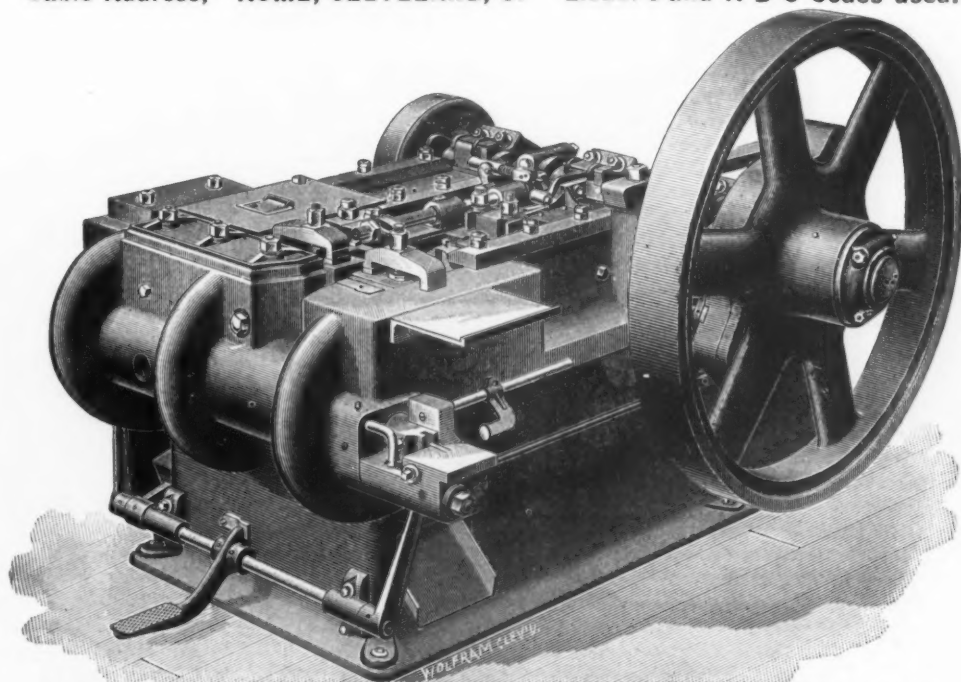


ACME 1 1/2-INCH DOUBLE BOLT CUTTER.
Net weight 2,700 lbs.

THE ACME MACHINERY CO.

CLEVELAND, OHIO, U. S. A.

Cable Address, "ACME, CLEVELAND, O." Lieber's and A B C Codes used.

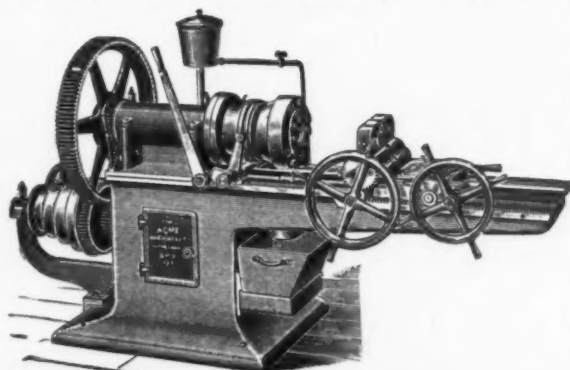


LATEST IMPROVED ACME 1 1/2-INCH HEADING AND FORGING MACHINE. Net weight 16,000 lbs.

MANUFACTURERS AND DESIGNERS OF

BOLT AND NUT MACHINERY

UPSETTING MACHINES, HEADING MACHINES, BOLT CUTTERS, NUT TAPPERS.



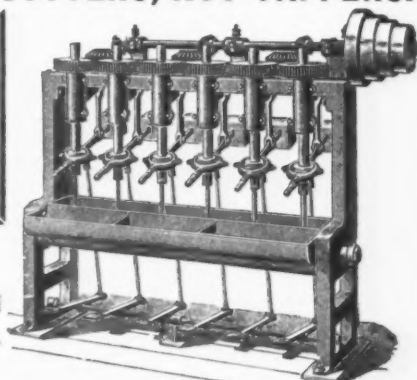
ACME 3/4-INCH SINGLE BOLT CUTTER.
Net weight 3,800 lbs.

CATALOG

giving valuable information,
illustrations of different
machines, weights, duty,
etc., will be sent free.

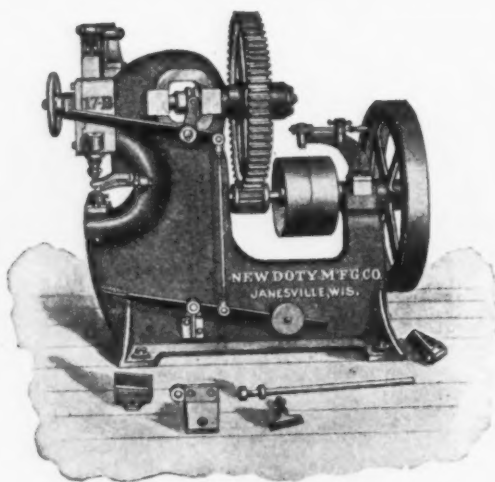
FOREIGN AGENTS:

Schuchardt & Schut'e, Berlin, Vienna,
Stockholm, Cologne, Brussels and
St. Petersburg.
C. W. Burton, Griffiths & CO., London.
Adolphe Janssens, Paris.



ACME 1 1/4-INCH SIX SPINDLE NUT TAPPER.
Net weight 3,800 lbs.

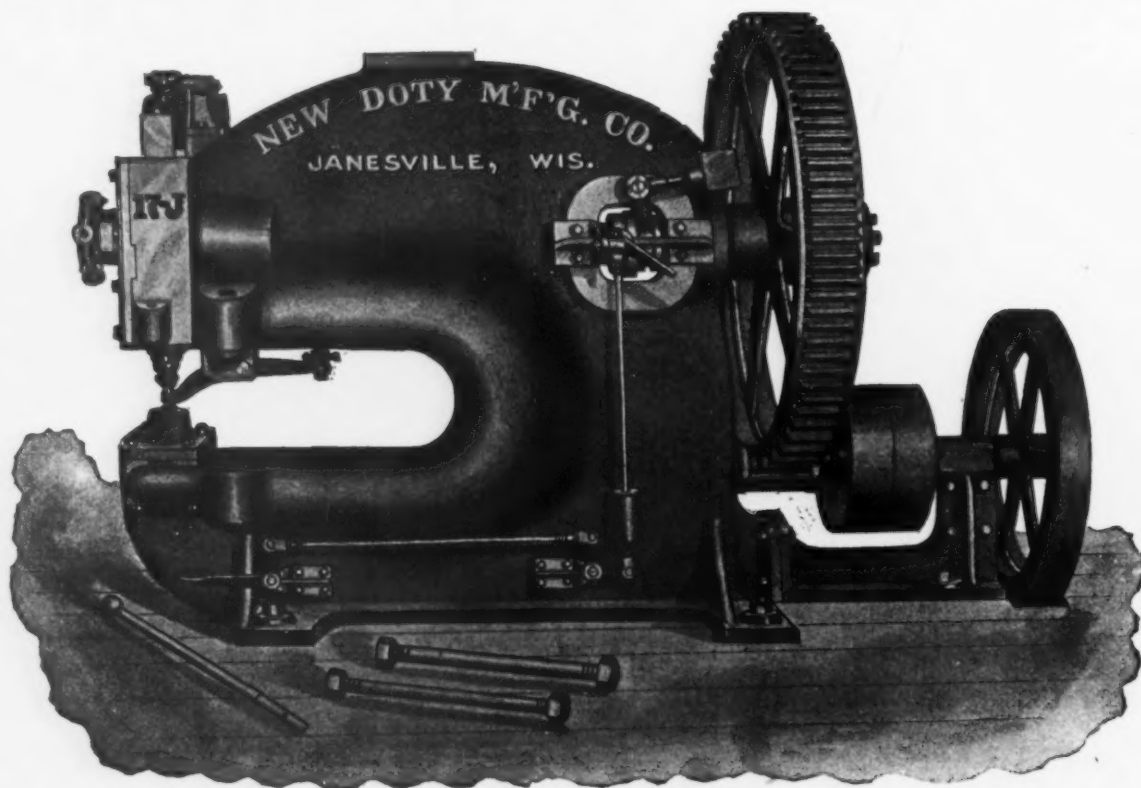
Hand and Belt Power
**PUNCHES,
SHEARS**
AND **BENDING
ROLLS.**



PUNCHES and SHEARS.

A NEW LINE.

All Sizes for All Purposes.



BENDING ROLLS.
NEW DESIGN.

NEW DOTY MFG. CO., Janesville, Wis., U. S. A.

It Won't Stand Up.

How often have you heard your workman make this complaint about his tools?

How often have you given instructions to have new ones made, with same result?

You sometimes wonder "what's the trouble" but nine times out of ten you give it no thought.

Unless, perhaps, to blow the tool maker, or, if the steel man is handy, tell him what you think of his old iron that he sells for steel.

You never stop to consider that it can be any fault of yours.

This is just where the trouble lies.

It is very easy to find fault with others, but it is very hard to believe that you are to blame.

Ninety-nine times out of a hundred your steel firm know their business. They have been making steel for many years.

The process of steel making has greatly advanced.

But has the handling of tools undergone as much change?

We are ashamed to say that in the majority of shops to-day tools are hardened and tempered the same as they were 50, yes, 100 years ago—viz., by means of the old open fire forge, burning coal or charcoal, where you put in a tool and then take your chances on the result.

But with a Stewart Gas Blast Furnace all such chances are obviated.

Its value is recognized by leading manufacturers throughout the world.

It requires no chimney.

It makes no ashes or smoke.

For hardening, annealing or tempering it is simply perfect.

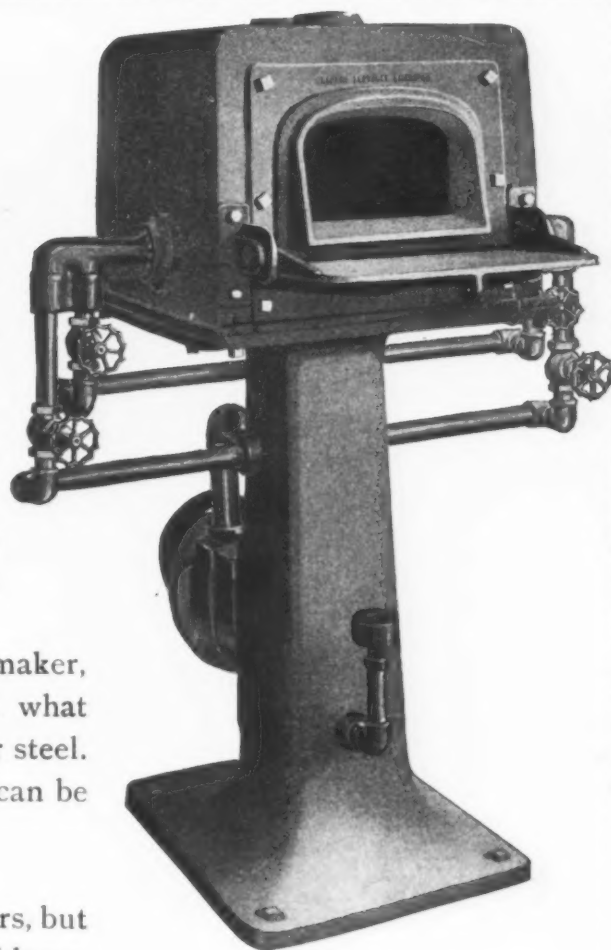
It burns from 5 to 8 cents' worth of gas per hour, and adds a hundred times that amount to the value of almost any tool heated in it.

We will send you one—any size—on trial. If it is not as we represent it we want it back and you will be out nothing by the deal.

Tell us what your work is, perhaps we can help you.

Catalogue for the asking.

They're made and sold by the



CHICAGO FLEXIBLE SHAFT CO.,

158-160 Huron Street,

CHICAGO, ILL.

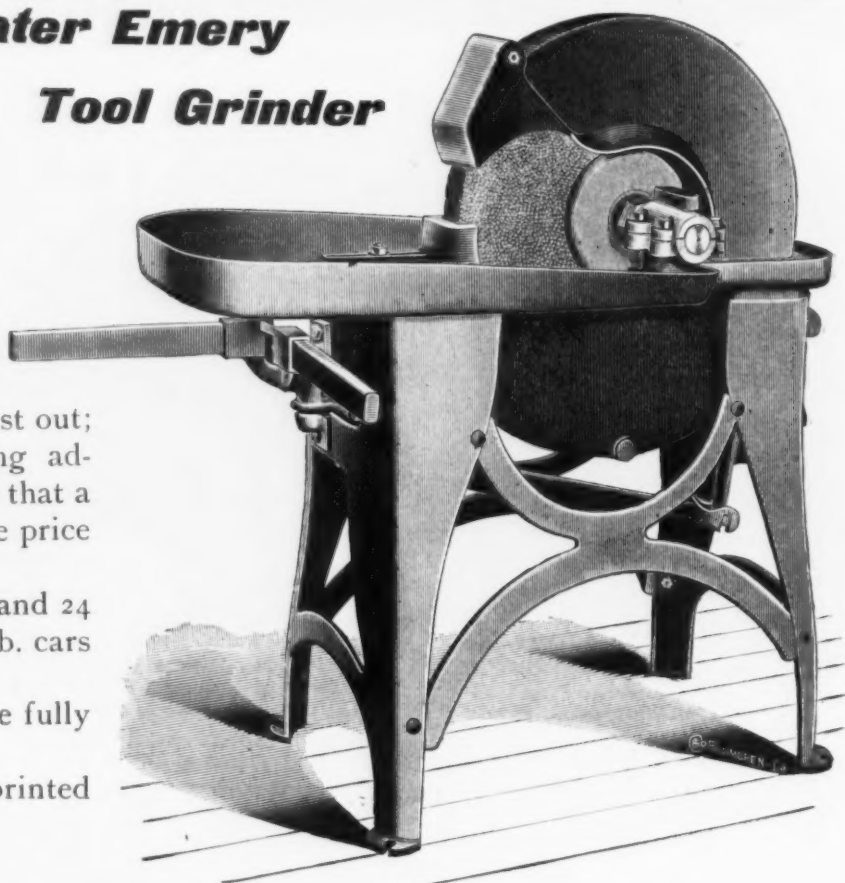
\$65.⁰⁰BUYS
THE
BEST**Water Emery
Tool Grinder**ON THE MARKETBAR NONE . . .

The simplest in construction, the easiest and most satisfactory in operation. No pump to cut out; no float to rust out; no bothersome, time-consuming adjustments to make. It is all that a Tool Grinder should be and the price is right.

Complete with countershaft and 24 in. by 2 in. wheel, \$65.00, f. o. b. cars Rockford.

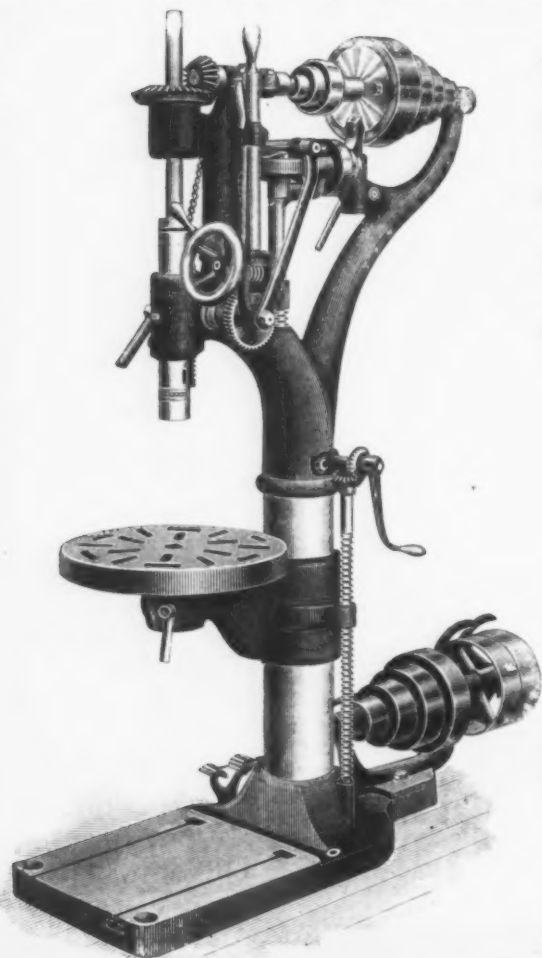
Both machine and wheel are fully guaranteed.

Better ask us to send you printed matter.



B. F. BARNES COMPANY,
ROCKFORD, ILL

We Will Guarantee This Drill



to drill up to one and one-half inches in Steel and to stand up without strain under continuous service on such work.

It is a B. F. Barnes 23-inch upright drill and is the best upright drill of the same or corresponding size made anywhere. We invite comparison of this Drill with others—any others—before you buy. Better ask us for further details.

B. F. BARNES COMPANY,
ROCKFORD, ILLINOIS.

AGENCIES:—Hill, Clarke & Co., Boston. Prentiss Tool & Supply Co., New York. The Pratt & Whitney Co., Chicago. The U. Baird Machinery Co., Pittsburgh. The Chas. A. Strelinger Co., Detroit. The Strong, Carlisle & Hammond Co., Cleveland O. L. Packard Machinery Co., Milwaukee.

WIRE or CHAIN MACHINERY

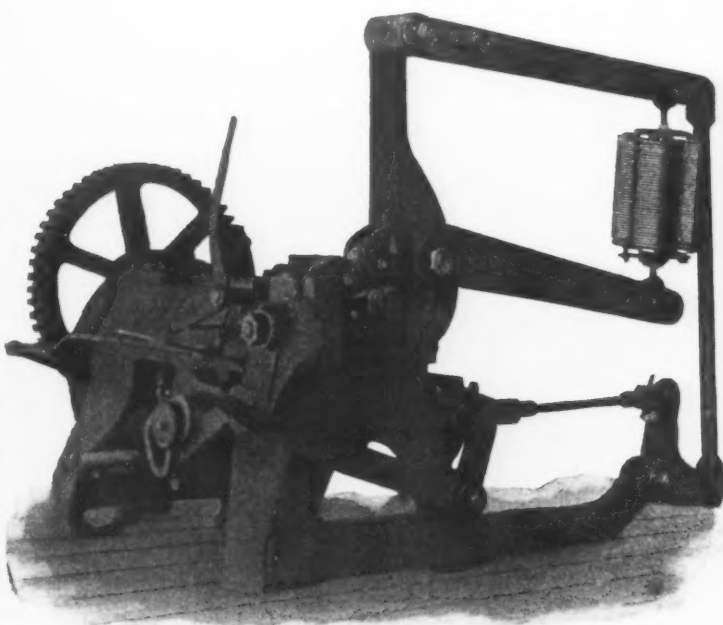
Do You Use It?

Do You Contemplate
Using same?

WE ARE....

- 1st. Pioneers in building machinery for **WINDING, CUTTING and WELDING.**
- 2d. Constantly improving methods in **CHAIN MACHINERY.**
- 3d. Building any capacity required up to date. **COMPLETE OUTFITS.**
- 4th. Preparing new design **WELDING-HAMMER**, to be ready for market early in 1901.
- 5th. Are anxious to take up the matter of **CHAIN MACHINERY** with you.
- 6th. Able to save you expense in manufacturing **CHAIN**, if you use our devices.

Write Us Fully About Same.



LIGHTNING WINDER FOR CHAIN LINKS AND RINGS.

Cold Stock.

Patented Nov. 8. 1893.

DO YOU.....

MANUFACTURE

WIRE?

HAVE YOU OLD STYLE MACHINERY
OR MODERN CONSTRUCTED?

Why not get the best?

We Have It.

Why not get the latest?

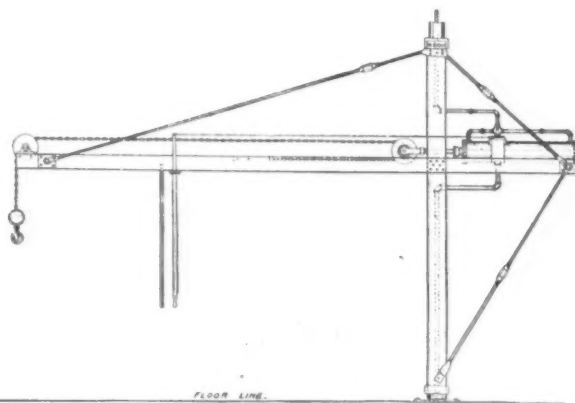
We Build It.

Why not aim for capacity?

We Can Assure It.

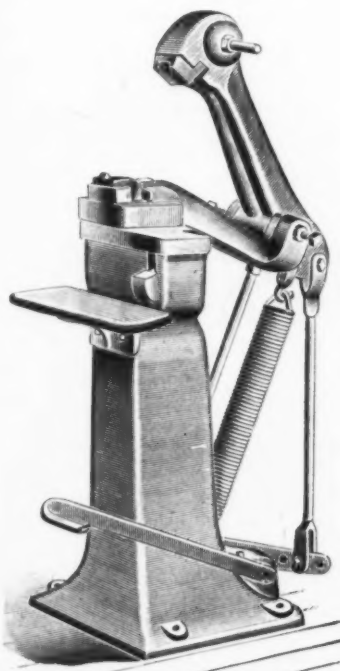
Why not investigate our method?

WRITE US FULLY.



IMPROVED STEAM CRANE.

500 lb. to 5000 lb. Capacity.



**GATHERING-BLOW CHAIN
WELDING-HAMMER.**

We build complete or in part **Wire Mills** for drawing wire from rods, finishing same for **Wire-Nails, Fence, Galvanizing, Tinning, and Market-Wire.** New and improved Frames, dry or wet wire. Muffles, Bakers, Cleaning-Tubs, Improved Wire-Buggies, Annealers and Furnaces. Lead and Spelter Pans and Furnaces, Tin Pans and Furnaces,

Factories any Capacity 10 to 500 tons 10 hours.

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THE TURNER, VAUGHN & TAYLOR CO.,

CUYAHOGA FALLS, O., U. S. A.

Cable Codes:

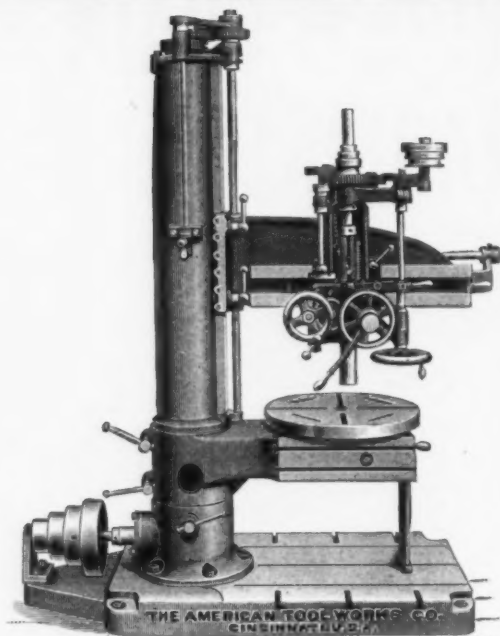
Western Union,
Directory Cable-Postal,
A. B. C. 4th Edition.

Cable Address:

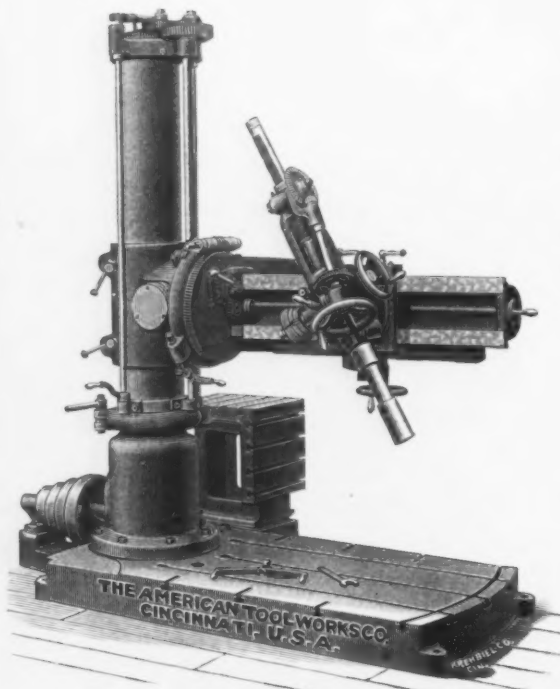
VAUGHN, CUYAHOGA FALLS, O.

*N. B.—Write us about your
wants. Perhaps we have just
what you are looking for.*

New Radial Drills.

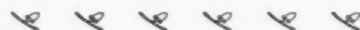


21-2 FT. RADIAL DRILL.

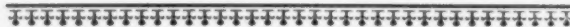


5 FT. FULL UNIVERSAL RADIAL DRILL.

We are re-designing our entire line of Radial Drills, and feel sure that our already large sales in this class of machine tools will be still greater in the future.



If you are in the market for a new Radial, write us before placing your order, as we can give you the latest and best tool that can be bought.



THE AMERICAN TOOL WORKS CO.

DESIGNERS AND BUILDERS OF

MACHINE TOOLS

General Offices and Works, CINCINNATI, U. S. A.

New York Office: 120 Broadway, Geo. Place, Agent.
 Pittsburgh Store: 107 Wood St., L. V. Blue, Agent.
 New Orleans: The Fairbanks Co.
 LONDON: Alfred Herbert, Ltd., 7 Leonard St., Finsbury, E. C. COVENTRY: Alfred Herbert, Ltd. BEKLIN: De Fries & Co., Act. Ges., Kloster Strasse 13-15. DUSSELDORF: De Fries & Co., Act. Ges., Graf Adolph Strasse, 83-87 PARIS: Roux Frères & Cie., 54 Boulevard du Temple. VIENNA: De Fries & Co., Act. Ges., Eschenbachgasse, 2. ANTWERP: Nyssens Frères, 33 Rue des Peignes. MOSCOW: Alfred Stucken.

Boston Store: 36 Federal Street.
 Philadelphia: The Fairbanks Co.
 Baltimore: The Fairbanks Co.
 Cleveland: The Strong, Carlisle & Hammond Co.

AURORA TOOL WORKS,

AURORA, IND.

MANUFACTURERS OF THE

"AURORA"

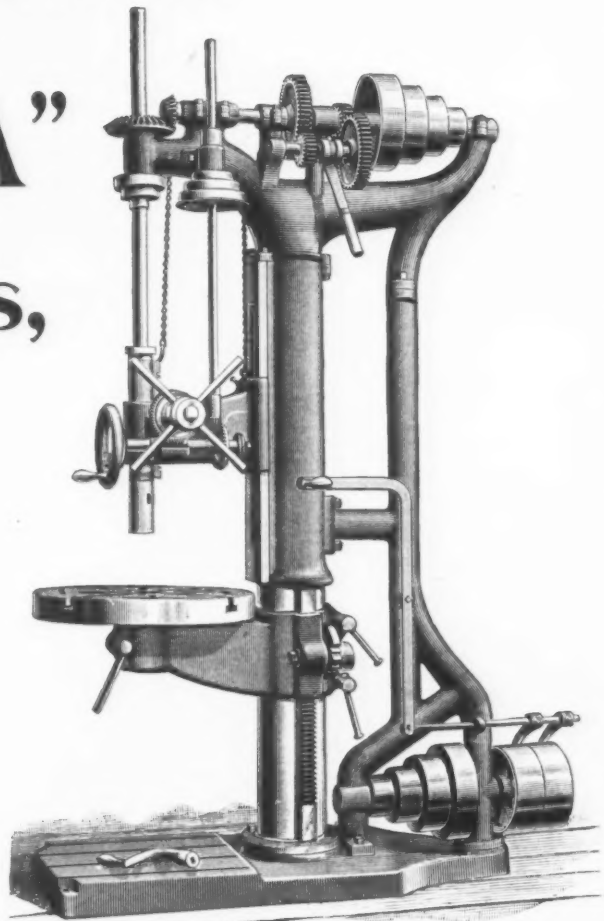
Upright Drills,

From 12 in. to 40 in swing.



FOR ADDITIONAL INFORMATION
ABOUT THESE MACHINES
SEND FOR OUR LATEST
CATALOGUE, OR ADDRESS

Niles Tool Works Co., New York.
Strong, Carlisle & Hammond, Cleveland.
Marshall-Huschart Mch. Co., Chicago.
Frank Toomey, Philadelphia.
The L. Rumsey Mfg. Co., St. Louis.
The Park & Lacy Co., San Francisco.
The U. Baird Mch. Co., Pittsburg.
Scott Tool Supply Co., Denver.
C. C. Wormer Mch. Co., Detroit.
Carolina Supply Co., Greenville, S. C.
H. A. Heppner & Company, Portland,
Oregon.



THE

"AURORA"

Plain Milling Machines,

Nos. 2 and 3.

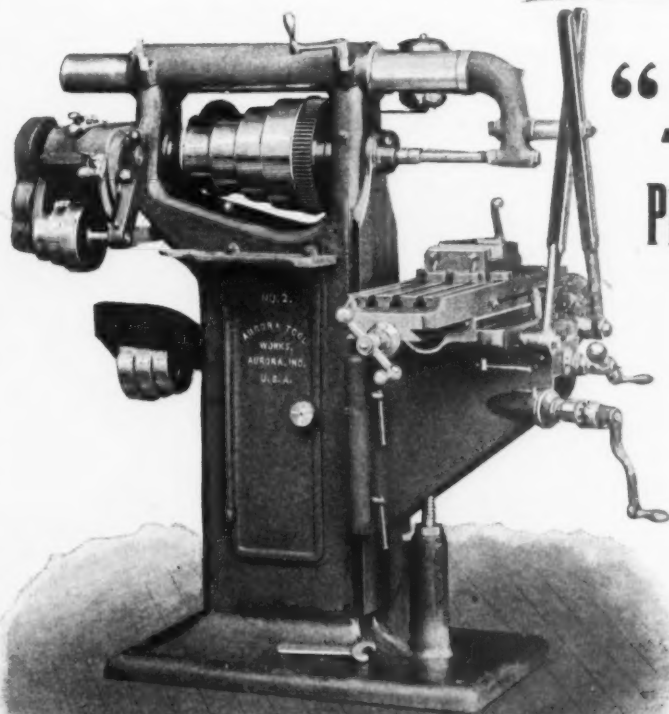
..GUARANTEED..

To be Perfect in Every Detail.

Our own faith in the good qualities

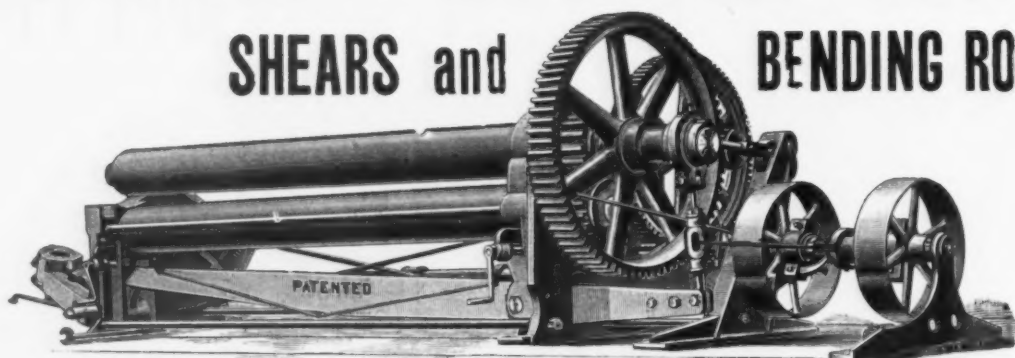
IN THESE MACHINES

is so strong that we are willing to take back the machine and refund the money where the customer is not satisfied, after thirty days' trial.



IMPROVED ROLLING MILL

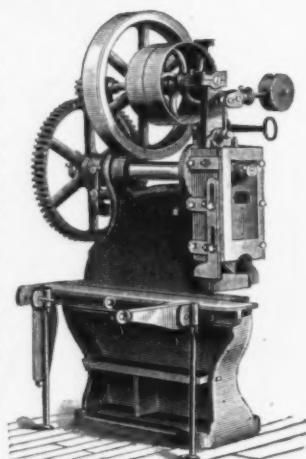
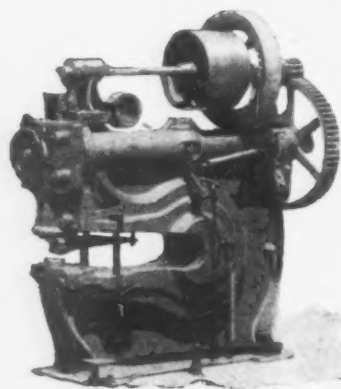
SHEARS and BENDING ROLLS.



PATENTED BENDING ROLLS.

Our Large Rolls can be easily opened and closed by one man in five to ten seconds by simply disengaging and turning back the hinged housing supporting the top roll. This raises and supports the end of the top roll and at the same time lowers the opposite end of the bottom roll sufficiently to release a formed plate of extreme width. The hinged housing lever and top roll being so constructed as to be in balance the machine is opened and closed surprisingly easy, and as the adjustment of the lower feed roll need not be changed in the least after the machine has been opened and closed it becomes practically a *self opening and self-adjusting roll*.

These rolls have the two front rolls geared, giving a positive feed, and the top roll being smaller than that of the old pyramid style, much smaller circles can therefore be formed in one operation. Plates can also be bent nearer the end than on the other styles of rolls.



PATENT DIRECT-ACTING AUTOMATIC STEAM, AIR OR HYDRAULIC SHEARS.

ADVANTAGES.

1st. Nothing in the way to obstruct the view of the operator from seeing a line or mark on his work.

2d. A Perfect Safety against seriously breaking the shear accidentally.

3d. A large saving of steam, the steam being entirely cut off the instant the cut is made, the knife and the hold-down returning by gravity. No steam or power is used only when actually cutting, the engine being attached direct to a compound lever, doing away with a continuous running engine and gearing, unless desired for continuous cutting.

4th. A perfect automatic engine, which can be changed from the longest to the shortest stroke in an instant.

5th. Fewer wearing parts and less wear than any other machine: from 1/10 to 3/100. There are no complicated parts to get out of order, no check valve to give trouble. There is no piston stuffing box to pack. No noisy clutch, shafting, gearing pulleys, nor heavy fly wheels in continuous motion, thus reducing wear and friction to a minimum.

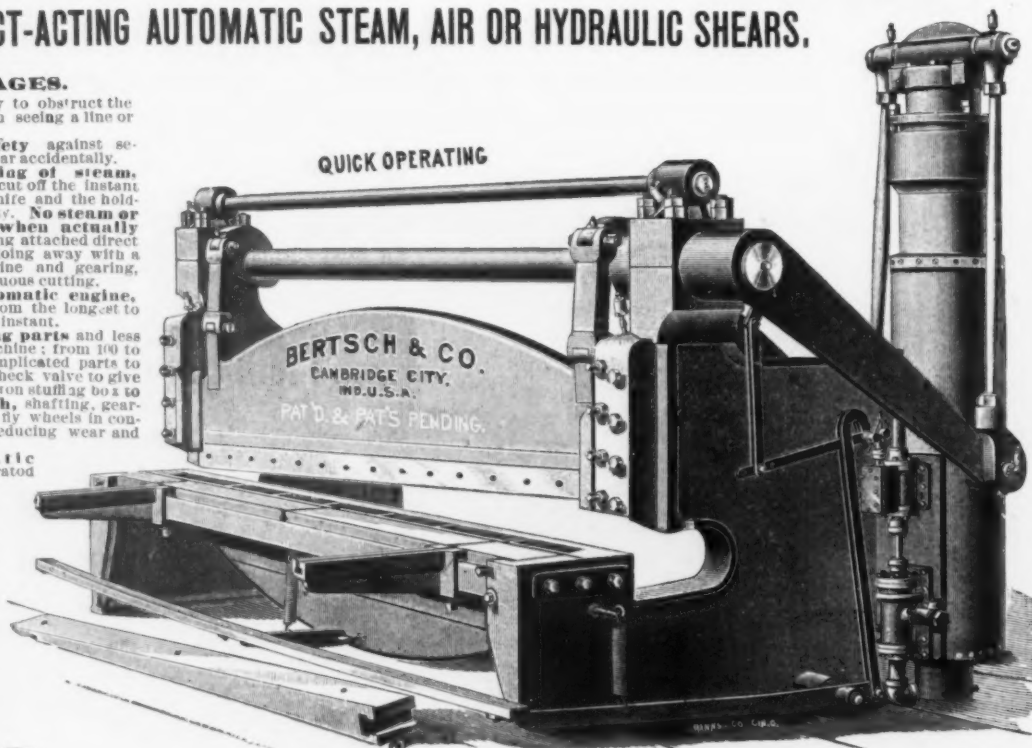
6th. The automatic hold down is operated from the main rock shaft by compression.

7th. Our machines are built on lines which experience has proven to possess the most features of merit.

8th. It is impossible to break our machine by the lapping of the blades, or the introduction of any piece of material of undue thickness between the blades, as, unlike a geared machine, it will stop at any point of the stroke, all parts being sufficiently strong to prevent any accidental breakage.

9th. The shear is also provided with our patent center bearing attached direct behind the gate or knife bar to prevent same from springing. All parts are rigid. The housings and knife bar being well braced, increase the capacity of the shear, especially when the blades become dulled, as they will not need as frequent grinding.

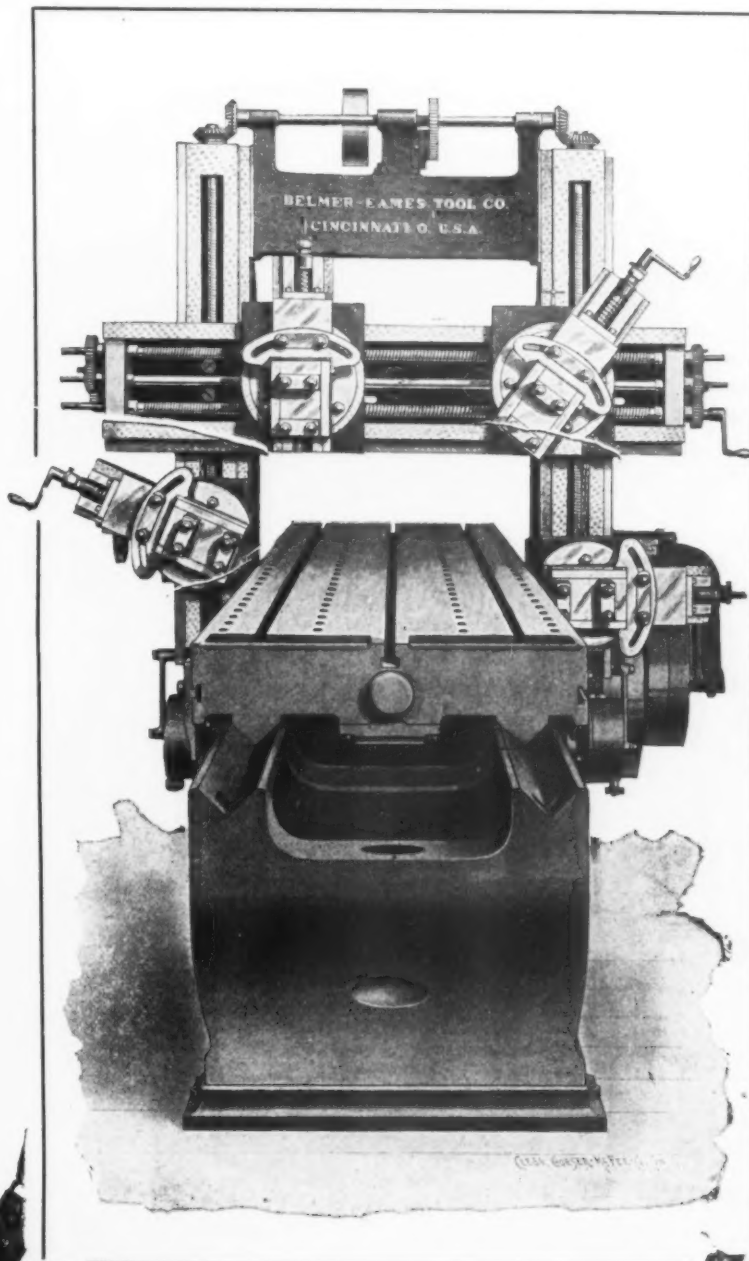
QUICK OPERATING



We also make Combined Trimming, Squaring and Slitting Shears, with 12, 15 or 18-inch throat, to trim or slit 24, 32 or 36-inch sheets as desired. Provided with or without lever attachment for light or heavy metal up to No. 16 iron; also drop leaves if desired. Power Shears, Improved Slip Roll Formers, all sizes. Punches and Lever Stock Shears. New General Purpose Combined Punch and Stock Shear, 8 sizes.

BERTSCH & COMPANY, Cambridge City, Ind., U. S. A.

BUILDERS OF ALL KINDS OF SHEET METAL WORKING MCHY.



We Build Big Planers,

from 36-in. upward.
Build them heavier and better than
ordinary market tools.

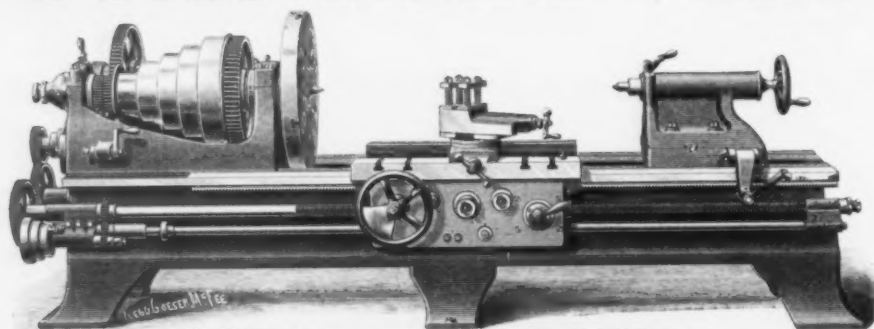
They have extra deep, heavy and rigid housings; extra wide bearing surface in V's, lubricated by roller oilers; extra depth of table, wide and heavy cross rail, and elevating screws hung in ball bearings, operated by hand or power, heavy, wide-face rack and driving gear, and are triple geared with journal on extreme outer end of pulley shaft supported by side bracket. Write for other details and our special descriptive circular "C," which will interest you.

BELMER-EAMES TOOL COMPANY,

CINCINNATI, OHIO, U. S. A.

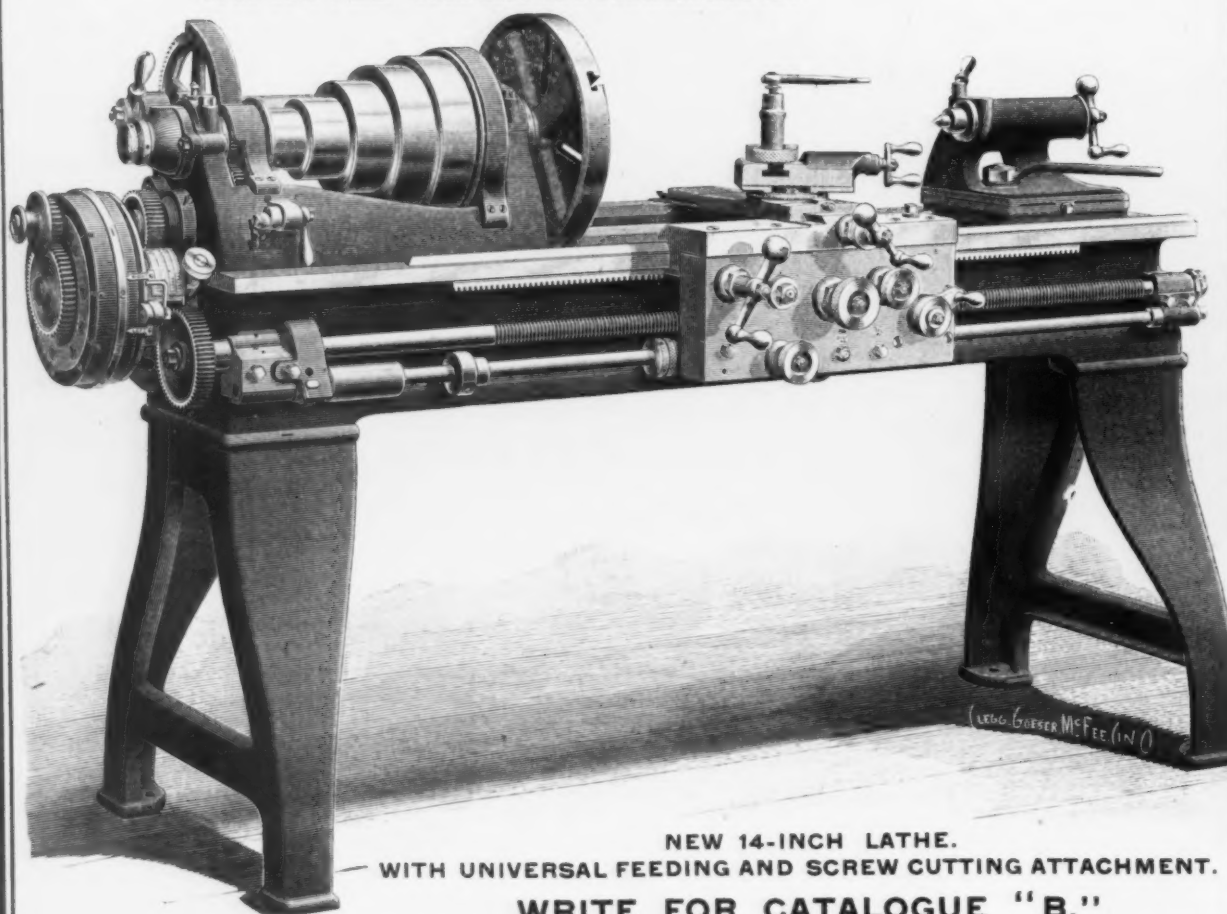
WE BUILD A STANDARD LINE OF ENGINE LATHES

From 14 in. to 36 in. Swing, together with All New and Improved Special Attachments for Various Classes of Work.



31-INCH LATHE.

COMPOUND, PLAIN OR RISE AND FALL REST,
REGULAR OR OVERHANGING TAILSTOCK,
DOUBLE BACK GEARED,
AUTOMATIC STOP,
ENGLISH OR METRIC LEADING SCREW,
LATHES FOR COARSE SCREW CUTTING,
TURRET LATHES,
INTERCHANGEABLE COMPOUND REST and
TURRET ON CARRIAGE,
TOOL ROOM LATHES,
IMPROVED TAPER ATTACHMENT.



NEW 14-INCH LATHE.

WITH UNIVERSAL FEEDING AND SCREW CUTTING ATTACHMENT.

WRITE FOR CATALOGUE "B."

BRADFORD MACHINE TOOL CO.,

CINCINNATI, OHIO, U. S. A.

LIEBER'S CODE USED.
CABLE ADDRESS, "STEWART."

Chas. Churchill & Co., Ltd., London, Birmingham, Manchester and Glasgow. Schuchardt & Schutte, Berlin, Cologne, Vienna, Brussels, Stockholm, St. Petersburg. Markt & Co., Ltd., Paris, France. J. J. McCabe, 14 Dey St., New York. McDowell, Stocker & Co., Chicago, Ill. The E. A. Kinsey Co., Cincinnati, Ohio. J. W. Wright & Co., St. Louis, Mo. Pacific Tool & Supply Co., San Francisco, Cal.

BICKFORD



RADIALS

HAVE SIXTEEN CHANGES OF SPEED.

Running from 12 to 280 revolutions per minute is the range of our new No. 1 Radial Drill. Then it has three changes of feed for each speed, is provided with both hand and power feed, quick advance and return, hand lever reverse, accelerated backing speed and automatic stop. And each and every speed is instantly available.

Back gears are conveniently located and may be engaged or disengaged instantly, while the machine is in motion, without any reaching for the shifter to stop the spindle, or to change from gears in to gears out, or vice versa.

The stress on a radial drill arm tends to twist it as well as raise it. To overcome this combined stress we have designed this arm in box section, ribbed top and bottom and strengthened at intervals with cross ribs.

The sleeve is mounted on a stationary stump, which extends up and has a bearing at the top of the machine, making practically a double column, and affording that rigidity so necessary to true work.

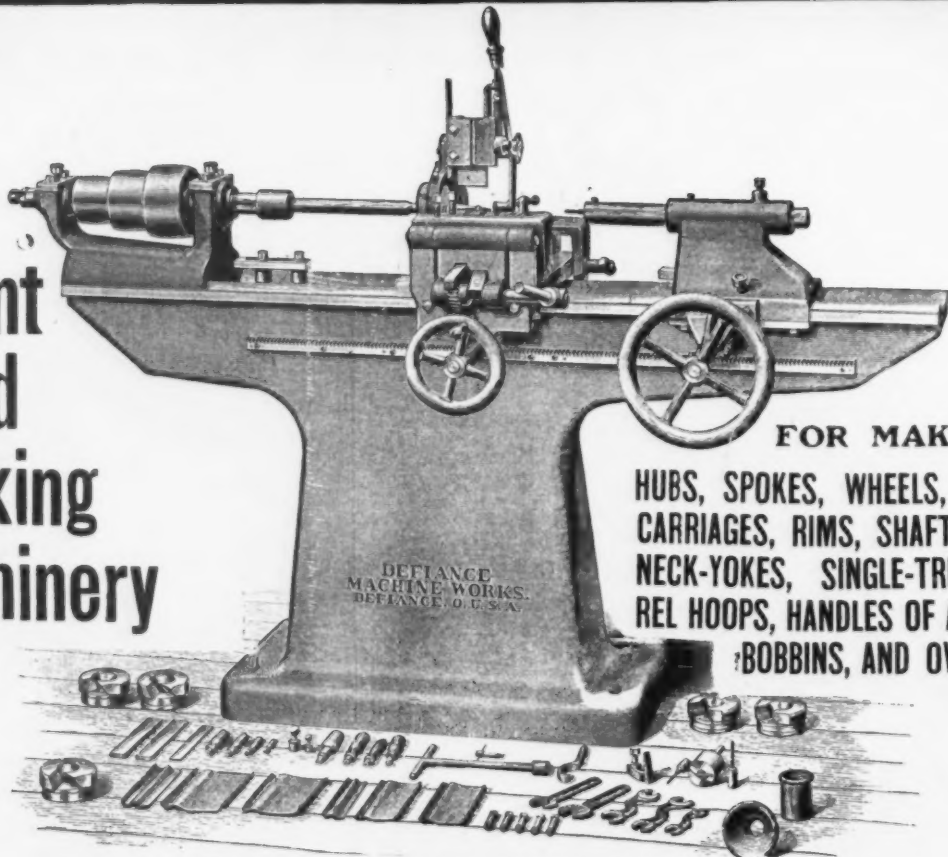
Our RED BOOK will put you onto the other good points and it's worth asking for.

The Bickford Drill & Tool Co.,
CINCINNATI, OHIO, U. S. A.

FOREIGN AGENTS: Schuchardt & Schutte, Berlin, Vienna, Brussels, Cologne, Stockholm, St. Petersburg. Chas. Churchill & Co., Ltd., London, Birmingham, Manchester, Glasgow. Adolphe Janssens, Paris, France. F. W. Horne, Yokohama, Japan.



Patent Wood Working Machinery



FOR MAKING

HUBS, SPOKES, WHEELS, WAGONS,
CARRIAGES, RIMS, SHAFTS POLES,
NECK-YOKES, SINGLE-TREES, BAR-
REL HOOPS, HANDLES OF ALL KINDS,
BOBBINS, AND OVAL WOOD
DISHES.

No. 0 Variety Turning and Boring Machine

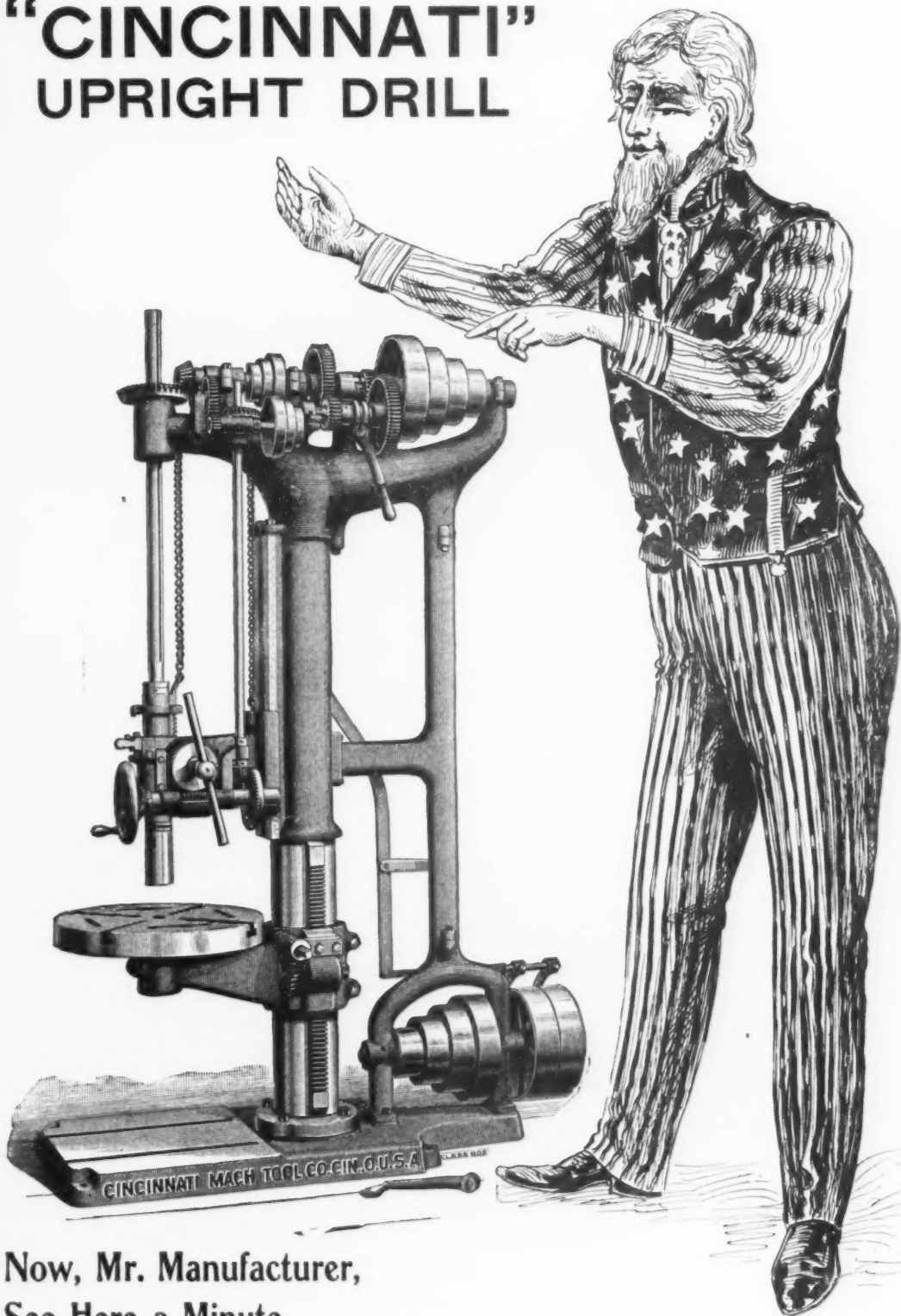
DEFIANCE MACHINE WORKS

DEFIANCE, OHIO, U. S. A.

ESTABLISHED 1850



THE "CINCINNATI" UPRIGHT DRILL



**Now, Mr. Manufacturer,
See Here a Minute.**

Does it seem reasonable to you that we would go on and on, iterating and reiterating our claims for the superiority of "Cincinnati" Upright Drills, if those claims would not stand the searching investigation we so persistently invite? Does it seem to you that we could cover the country from Maine to California, and from the Canadian line to the Gulf of Mexico, with testimonials telling of "Cincinnati" advantages if the advantages were not in the tools we tell of? Well, hardly. Every claim we make is backed up by facts, and every testimonial we print results from satisfactory drill service and pleasing profits. If you live near any manufacturing city where upright drills are used, we can almost surely put you in close touch with one or more users of "Cincinnati" Upright Drills, and will gladly do so, leaving you to find out the truth about them in your own way.

**We have
a new
geared
tapping
attachment
on the spindle
of our drills
which we
should be
glad to
explain.**

Cincinnati Machine Tool Company,

Drill Book Free.

1935-1939 Western Ave., Cincinnati, Ohio, U. S. A.

Workmanship

*Is of first importance to the buyer
of a Milling Machine.*

THE QUALITY OF WORKMANSHIP DETERMINES
LARGELY THE TRUE VALUE AND USEFULNESS
OF THE TOOL TO THE SHOP.

IN THE LONG RUN THE WELL BUILT MACHINE IS
THE PROFIT MAKER.

SUPERIOR WORKMANSHIP IS A DISTINCTIVE FEAT-
URE OF THE "CINCINNATI" MILLER.

IT IS THE PRODUCT OF SPECIALIZED MANUFAC-
TURING PROCESSES IN WHICH DETAILS ARE
PERFECTED.

ALL BEARINGS, EITHER ANGULAR OR FLAT ARE
SCRAPED TO SURFACE PLATES.

ALL SPINDLES AND SHAFTS ARE MADE FROM CRU-
CIBLE STEEL, TURNED AND GROUND.

ALL HOLES THROUGH HARDENED PIECES ARE
GROUND OR LAPPED.

ALL STEEL GEARS, CLUTCHES, ETC., WHEREVER
NECESSARY ARE CAREFULLY HARDENED AND
GROUND.

ALL OPERATING SCREWS ARE MADE OF SPECIAL
STEEL WHICH IS ROUGH TURNED AND ALLOWED
TO STAND BEFORE BEING FINISHED.

ALL MACHINE PARTS ARE MADE PERFECTLY CLEAN
BEFORE ASSEMBLING.

ALL MACHINES ARE TESTED ON WORK BEFORE
LEAVING ERECTING FLOOR.

ALL LIMITS ARE RECORDED AND MAY BE HAD BY
PURCHASERS IF DESIRED.

WE ARE PLEASED TO HAVE THE "CINCINNATI"
SUBJECTED TO THE TEST OF WORKMANSHIP
AND INVITE A CAREFUL INSPECTION OF OUR
MANUFACTURING METHODS.

"THE CINCINNATI" SECURED THE GOLD MEDAL
AWARD AT THE PARIS EXPOSITION, 1900.

OUR NEW CATALOGUE GIVES SPECIAL FEATURES.

The Cincinnati Milling Machine Co.,

CINCINNATI, OHIO, U. S. A.

EUROPEAN AGENTS: Schuchardt & Schutte, Berlin, Cologne, Vienna, St. Petersburg, Brussels, Stockholm
and New York. Adolphe Janssens, Paris. Chas. Churchill & Co., Ltd., London, Birmingham, Glasgow,
Manchester and Newcastle-on-Tyne. The Niles Tool Works Co., 39 Victoria St., London, S. W.

This Is The Planer

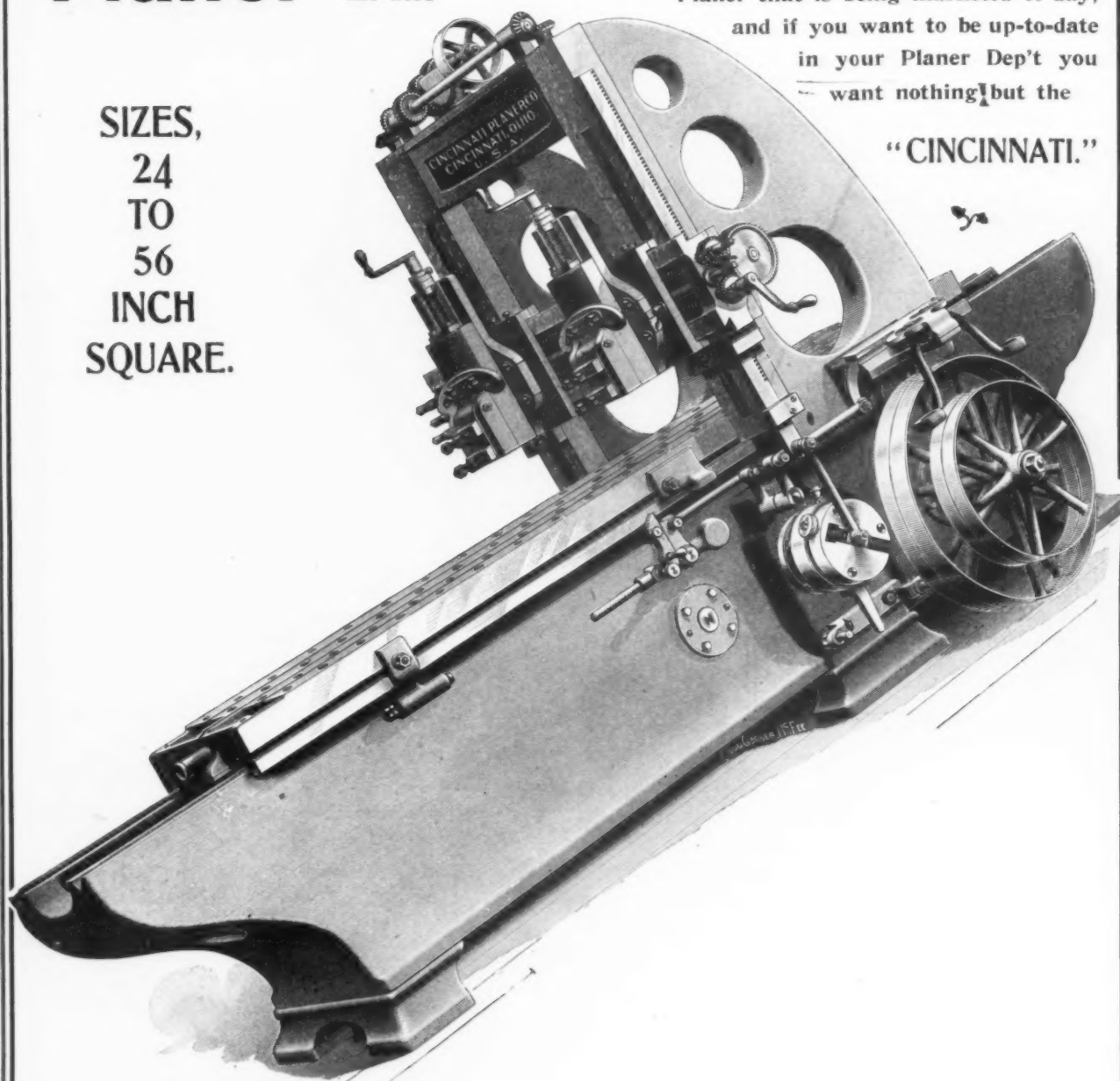
SIZES,
24
TO
56
INCH
SQUARE.

THAT CARRIED OFF THE MEDAL ^{AT THE} PARIS EXPOSITION.

Its many new and original features appealed to the judges just as they have appealed to the many users throughout the world. * THE PATENT COMBINATION FRICTION which insures positive feed when heads are taking their heaviest cut; the SAFETY LOCKING DEVICE which prevents injury to the work and accident to the operator; the DIRT PROOF TABLE which prevents chips and dirt from marring and cutting the ways; the MICROMETER DIALS on the down feed screws; the modern deep beds, the box housings, and the smoothness of the movements throughout go to make up the best

Planer that is being marketed to-day, and if you want to be up-to-date in your Planer Dep't you want nothing but the

"CINCINNATI."



The CINCINNATI PLANER COMPANY,

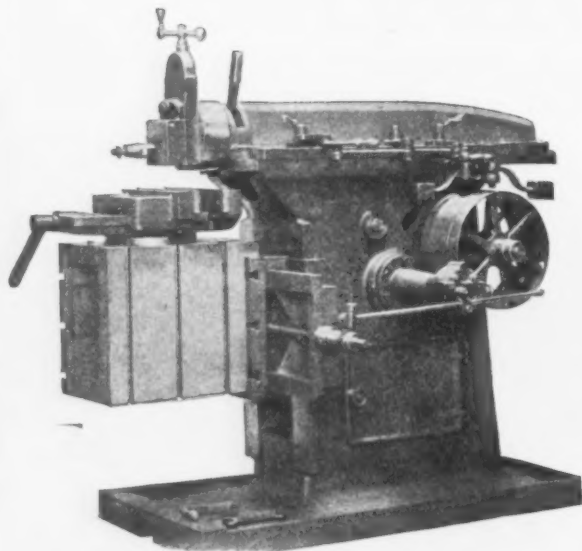
Cincinnati, Ohio, U. S. A.

Cable Address: "Planer," Cincinnati.

THE CINCINNATI SHAPER CO.,

Cincinnati, Ohio, U. S. A.

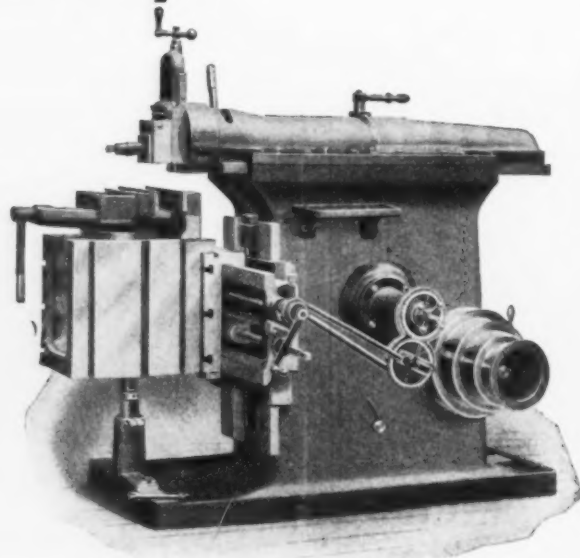
Shaping Machines Exclusively



Triple Geared Rack Shapers.

These machines furnished with regular countershaft, or with special variable speed countershaft (an extra), affording any cutting speed from 9 to 45 feet per minute, with a constant return of the ram at a rate of 60 feet per minute. This revolutionizes the Rack Shaper.

Sizes, 26-inch and 30-inch stroke.



Back Geared Crank Shapers.

Eight cutting speeds to ram, with quick return. Opening through column under ram for key-seating shafting. Gears large diameter, wide face and coarse pitch. Great weight, large wearing surfaces. Cutting power unequaled.

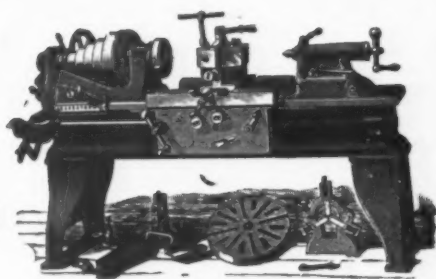
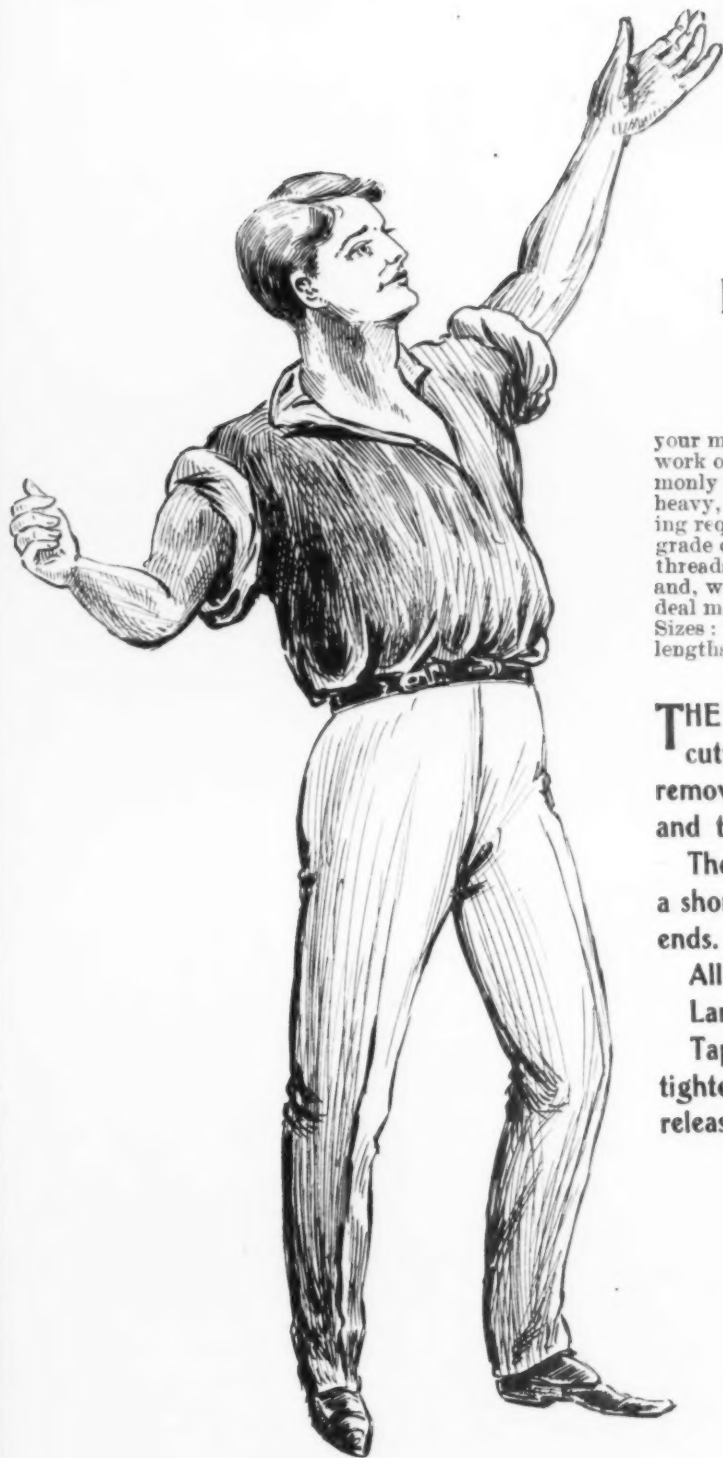
Sizes, 16-inch, 20-inch and 24-inch strokes.

**RIGID.
ACCURATE.
POWERFUL.**



FEATURES..

Width and depth of bed. Large bearing surfaces of saddle. Width and consequent stiffness of ram. Driving motion so arranged as to give plenty power of belt at beginning of cut, with an easy start and ending of cut. Easy and quick adjustment of feeds of saddle, of head and circular attachment. Power down feed of head convenient and easy of access. Large bases, which reduce vibration of this class of machine to a minimum. Great depth of bearing of saddles on bed, giving strong support to tables in lowest position.



It Makes Little Difference How Skillful

your machinists are, they cannot do good Lathe work on a poor Lathe. Our Lathes are uncommonly good ones. They're stiff, powerful and heavy, and are built especially to meet the exacting requirements of shop owners who do a high grade of work. These Lathes cut entire index of threads and feeds without changing gear or belt, and, with their improvements, will do a great deal more and better work than the old types. Sizes: 14 inch to 48 inch swing. Beds in even lengths.

THE entire index for feeding and screw cutting is obtained instantly, without removing a single gear. Extensive feed and thread cutting changes.

The change gears are mounted on a short shaft running in bearings at both ends.

All feeds are graduated.

Large hole in spindle.

Taper attachment set or released by tightening or releasing one screw, and releasing another, or vice versa.



**The Lodge & Shipley Machine Tool Co.,
Cincinnati, Ohio, U. S. A.**

Selig, Sonnenthal & Co., 85 Queen Victoria St., London, England.

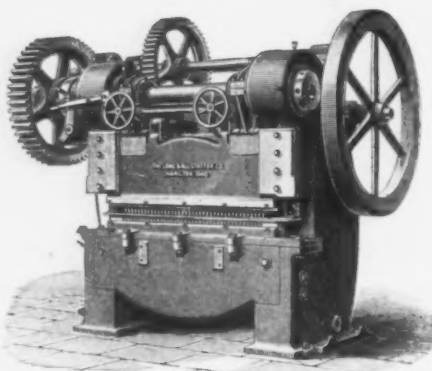
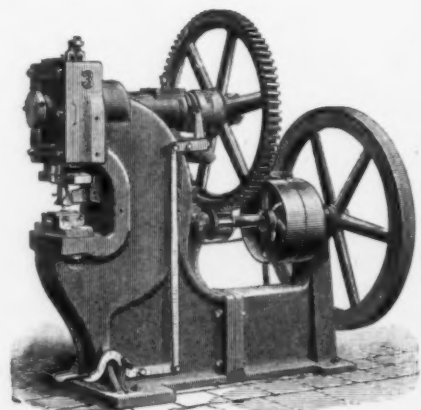
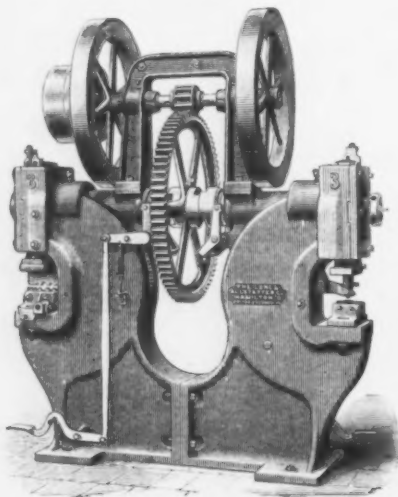
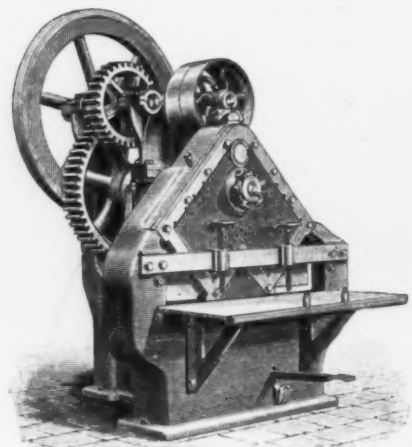
Adler & Eisenschütz, 28 Via Principe Umberto, Milan, Italy.



NO!

YOU CAN'T OBTAIN
A BETTER PUNCH
OR SHEAR

THAN
THE
HAMILTON
PRODUCT.
THEY
ARE
A
SPECIALTY
WITH
US
AND
IN
THIS
AGE
OF
SPECIAL-
IZATION
YOU
KNOW
WHAT
THAT
IMPLIES.



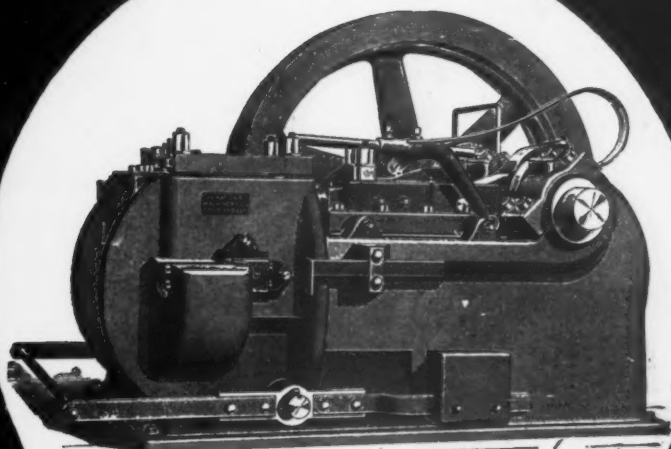
*The Long
& Allstatter*

Hamilton, Ohio, U. S. A. Co.

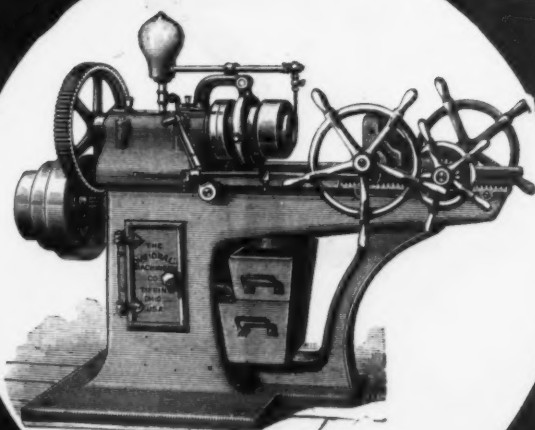
BOLT AND NUT MACHINERY

BOLT CUTTERS, HEADING, UPSETTING AND FORGING MACHINES, NUT TAPPERS, BOLT POINTERS, NUT MACHINES, WIRE NAIL MACHINES.

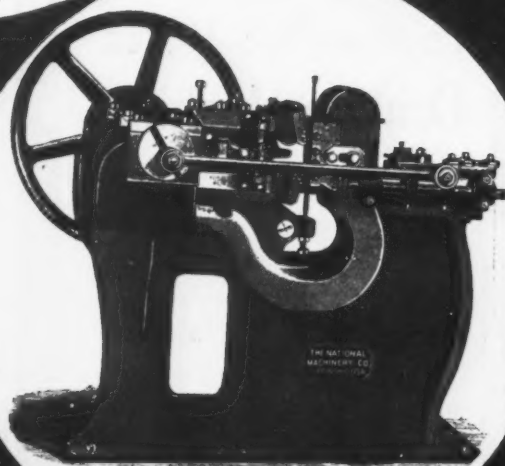
Send for Our Catalogue representing the most complete line of the above machinery manufactured.



National Heading, Upsetting and Forging Machine,
made in 7 sizes and with capacity to 4 inch.



National Single Bolt Cutter,
made in 13 sizes and with capacity
to 6 inch.



National Wire Nail Machine
made in 6 sizes.

Represented in European Countries by leading machinery dealers.

The National Machinery Co.

TIFFIN, OHIO, U. S. A.

able Address, "National Tiffn." Codes used, Lieber's and Western Union.



The Vise is adjustable forward and back, so that when one end of the saw wears out the other can be used. The Vise jaws swivel. Machine is stopped automatically at the end of cut, and is provided with adjustments for securing perfectly straight cuts. This machine has positive feed, but the saw is relieved on the back stroke, thus preventing unnecessary wear on the teeth. Write for special descriptive circular No. 10. Weight of machine, 330 lbs. Price, including 6 saws, \$50.00.

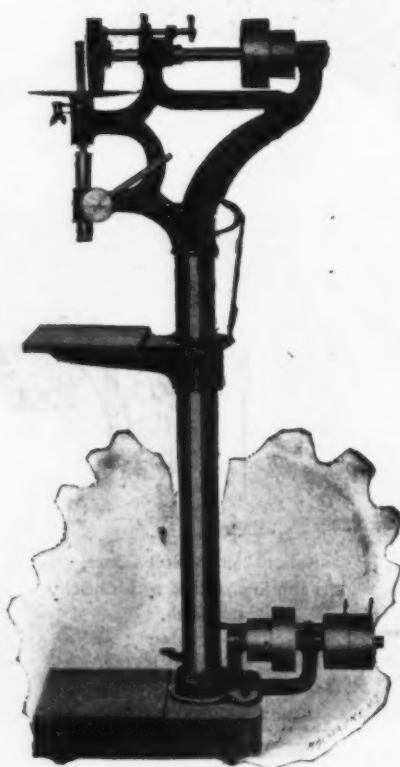
THE CHALLENGE POWER HACK SAW

The Patterson Friction Disc Driven Drilling Machine

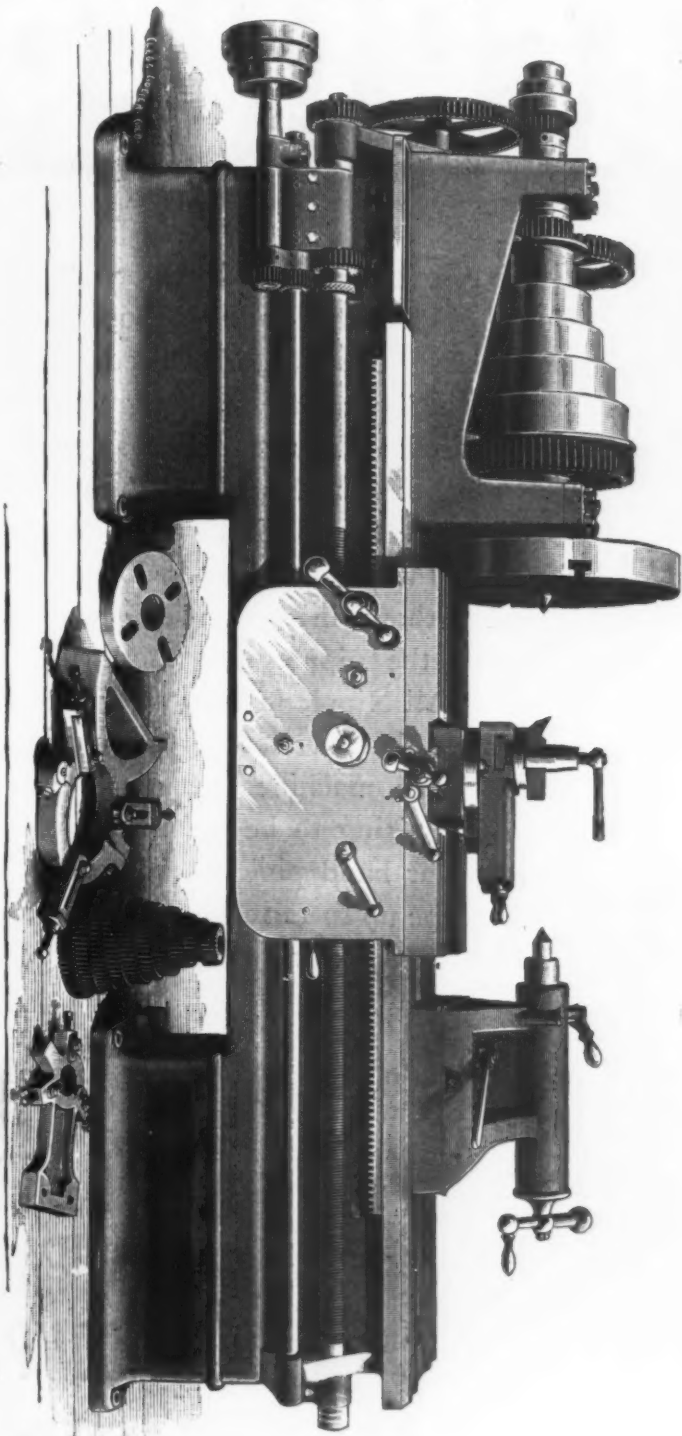
Swing, - 15½ inches.
Weight, - - 245 lbs.
Capacity, - 0 to ½ inch.
Speed, - - 200 to 1500
Price, - - - - \$45.
(Without Chuck.)

SEND FOR
CIRCULAR "D."

BUILT BY
**The Patterson
Tool & Supply Co**
DAYTON, OHIO,
U. S. A.

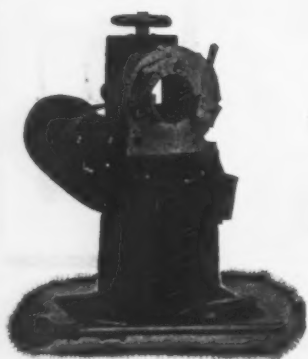


LATHES

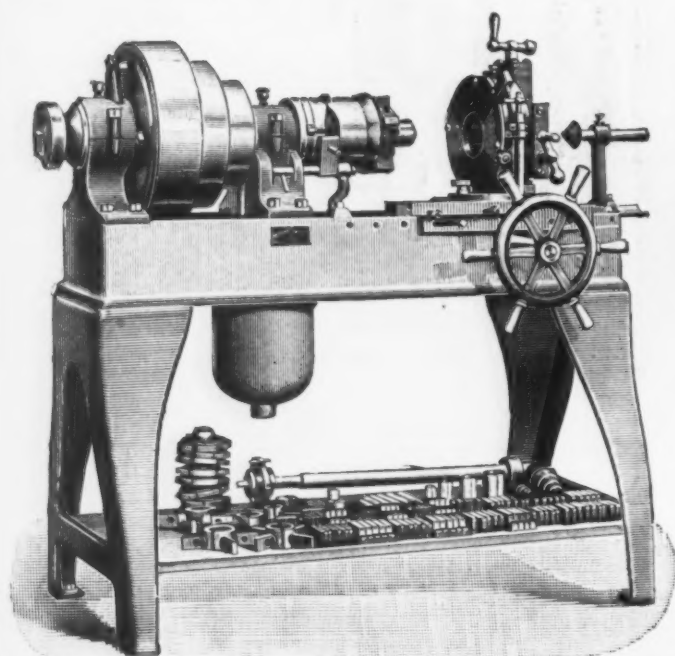


SCHUMACHER & BOYE
CINCINNATI, OHIO

Pipe Threading and Cutting MACHINERY



We make hand and power Pipe Threading and Cutting Machines, using adjustable quick opening and closing cutter heads, fitted with interchangeable chasers. Chasers all set by graduated scale to any size desired and as readily sharpened as a lathe tool. The vise on the Apex Nipple machines opened or closed while the machine is in motion. Nipples cut thread to thread and grippers furnished that grasp the thread without injury and abolish the necessity of screwing the nipple into the grips after they are closed. All Nipple machines furnished with a reamer to remove the burr left by the cutting-off tool, which makes these machines peculiarly well adapted for piping requiring to be absolutely free from chips and burrs. Our hand pipe threading machines are made to take pipe up to 12 inches diameter and are operated either by a crank or ratchet lever.



**THE
MERRELL
MANUFACTURING
COMPANY,**

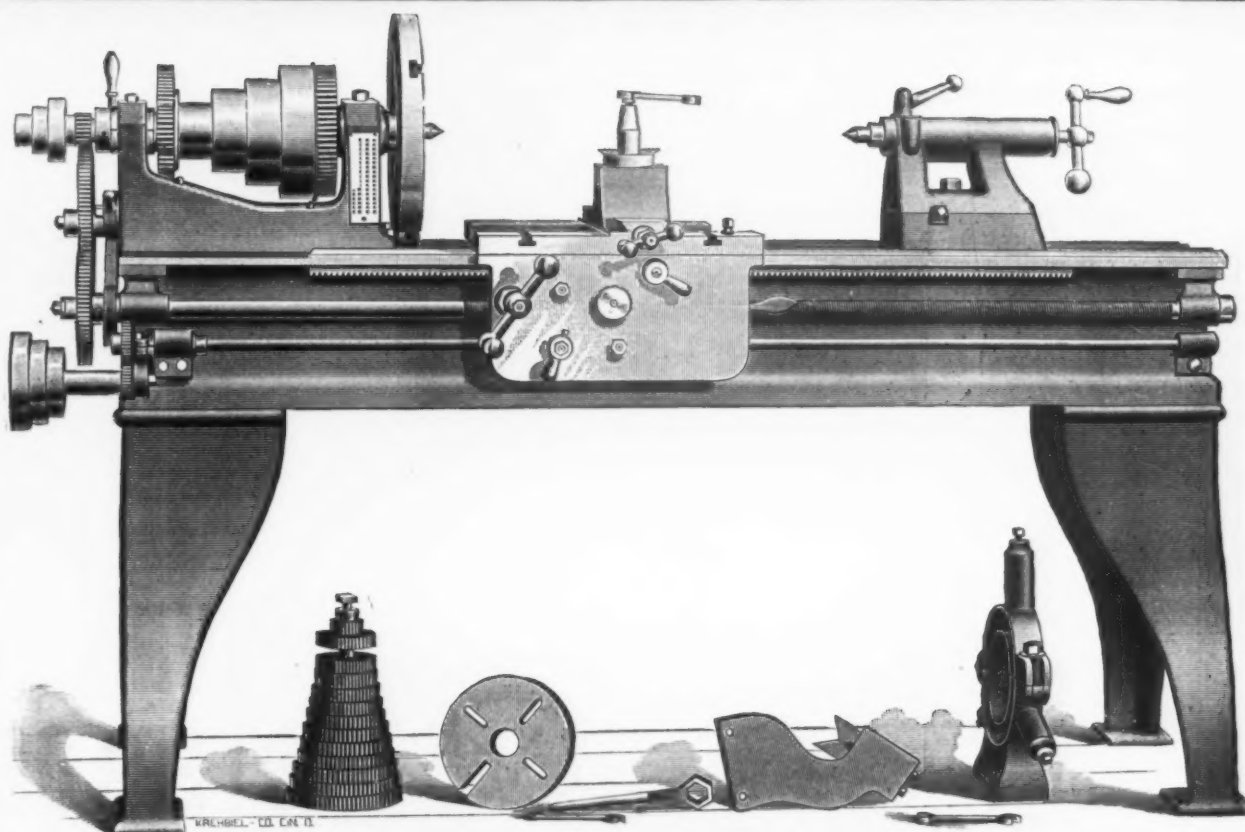
**TOLEDO,
OHIO,
U. S. A.**

European Office:

16 Great Eastern Street,
Fairbanks Co.,
London, E. C.,

THE

SEBASTIAN LATHE



"You Can't Find Anything Better"

OUR SPECIALTIES

9 and 10 inch Foot Lathes 13, 14 and 15 inch Engine Lathes

CATALOGUE "I. A." FOR THE ASKING.

Sebastian Lathe Company,

113-115 Culvert St., Cincinnati, Ohio.

AGENTS:—Selig, Sonnenthal & Co., London, Eng.; Jn. Tragardh & Co., Goteborg, Sweden;
E. Sonnenthal, Jr., Berlin, Germany; R. S. Stokvis & Zonen, Rotterdam, Holland.

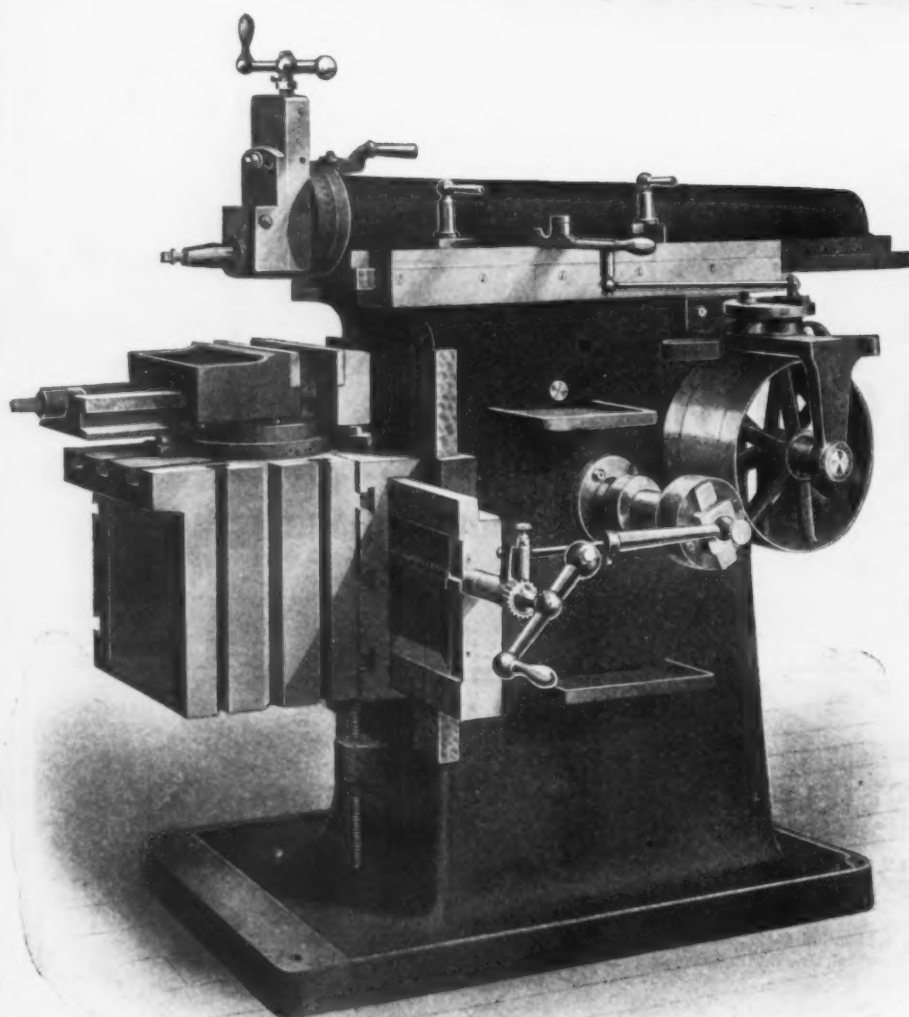
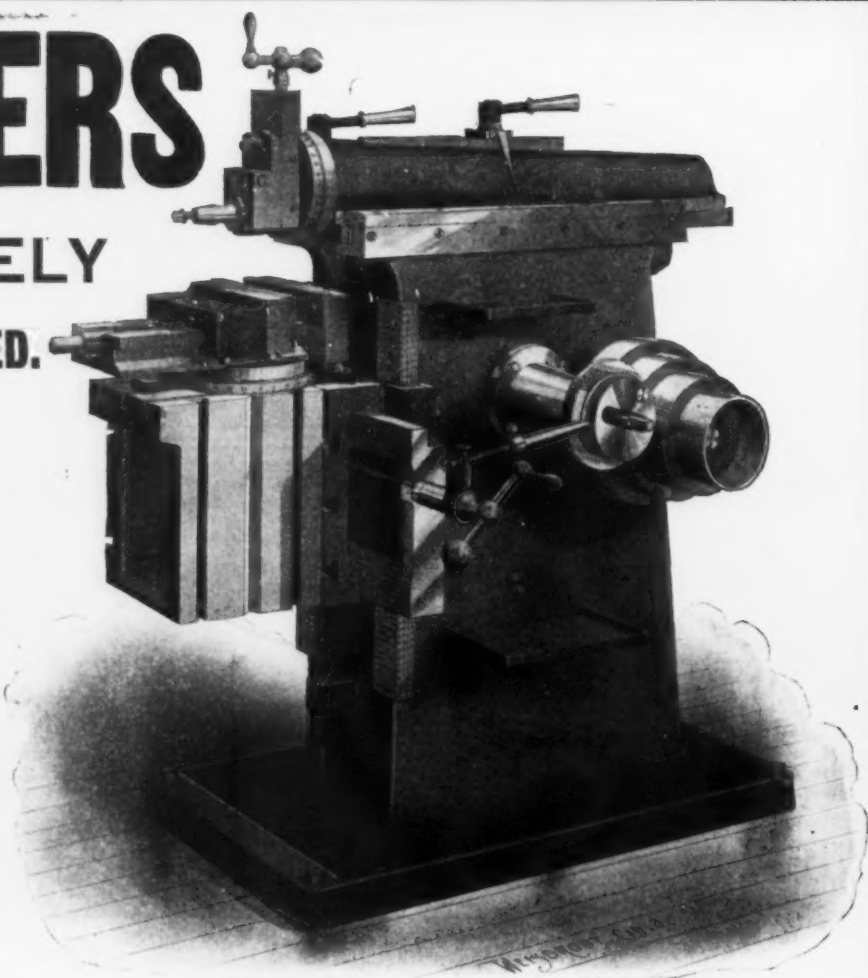
SHAPERS

EXCLUSIVELY

CRANK and GEARED.

12 TO 32-INCH STROKE.
A STRICTLY HIGH-GRADE
MACHINE CONTAINING
MANY NEW FEATURES
AND ADVANCED IMPROVE-
MENTS.

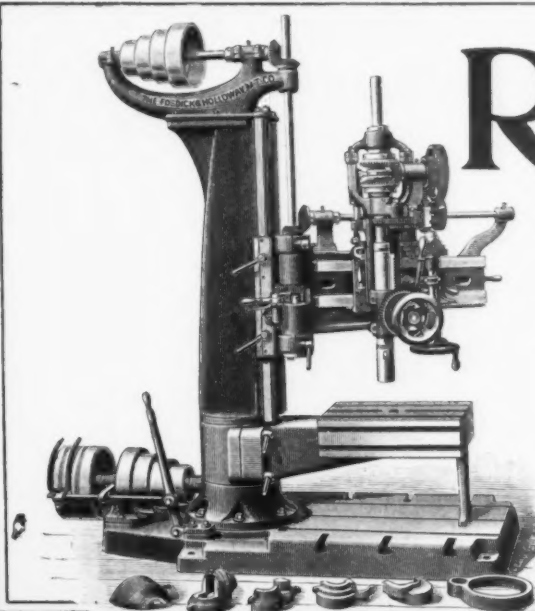
If in the market for a Shaper
our Special Circular D, giv-
ing complete description,
prices, etc., will prove inter-
esting. Shall we send it?



**JOHN
STEPTOE
& CO.,**

**CINCINNATI,
OHIO, U. S. A.**

**European Agents
SELIG SONNENTHAL
& CO.,
London, Eng.**



Radial Drills

2½, 3½, 5 and 6 foot Plain
5 and 6 foot Half and Full Universals

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Our circular fully describes the good points of these machines. Mailed upon application.

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Machine Tool Co., CINCINNATI,
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**Exclusively
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**Strength,
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and...
Durability.**

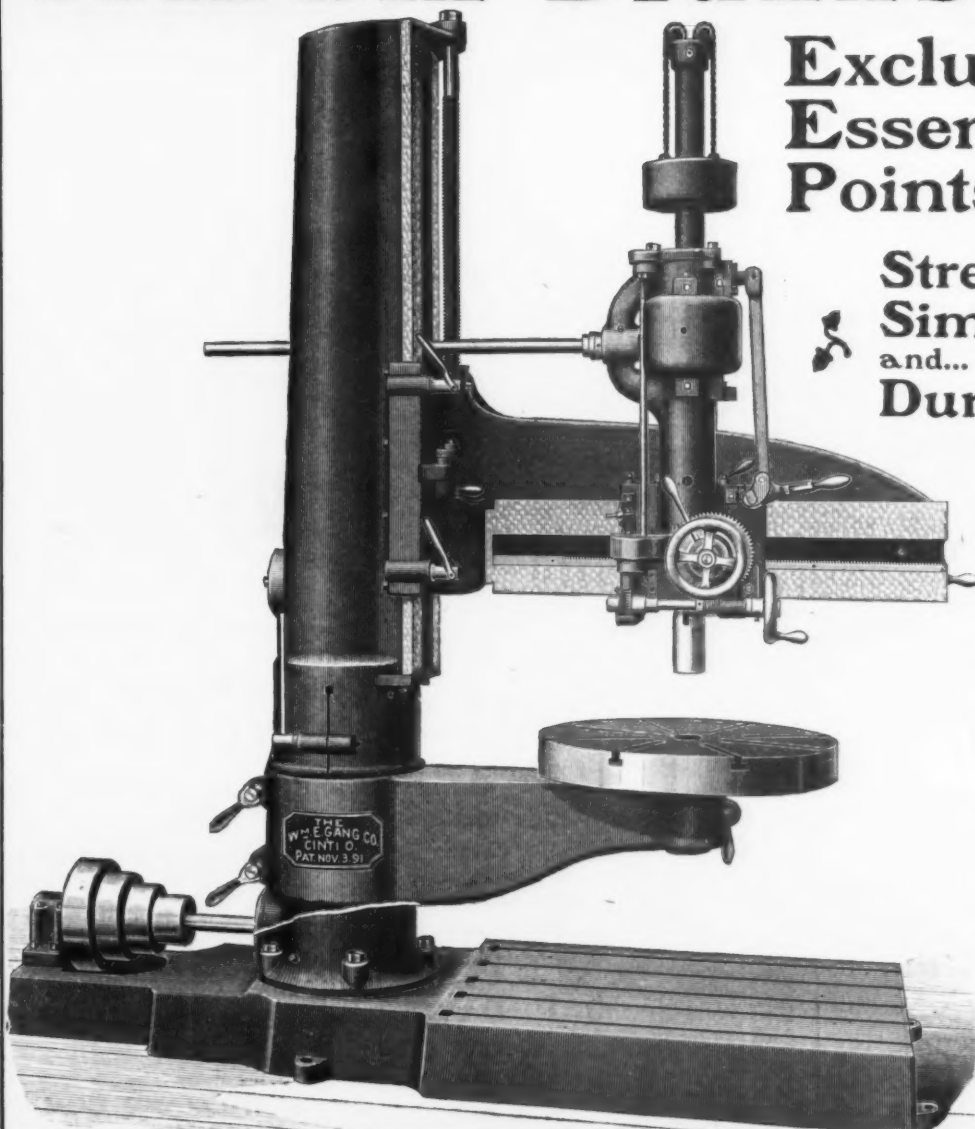
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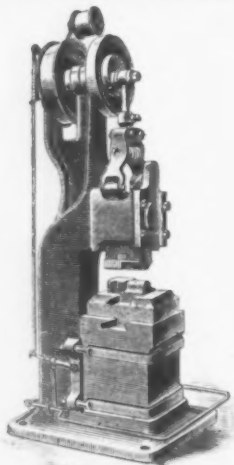
controls all the movements of spindle. This feature, together with simplicity of construction, great power and rigidity and ease of operation, place our Drills at the head.

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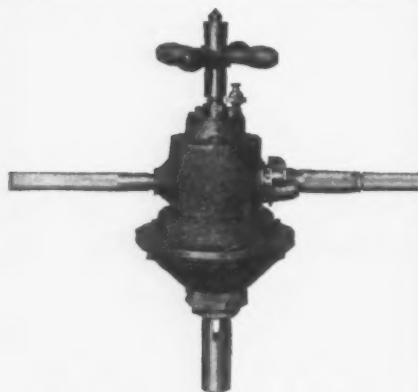
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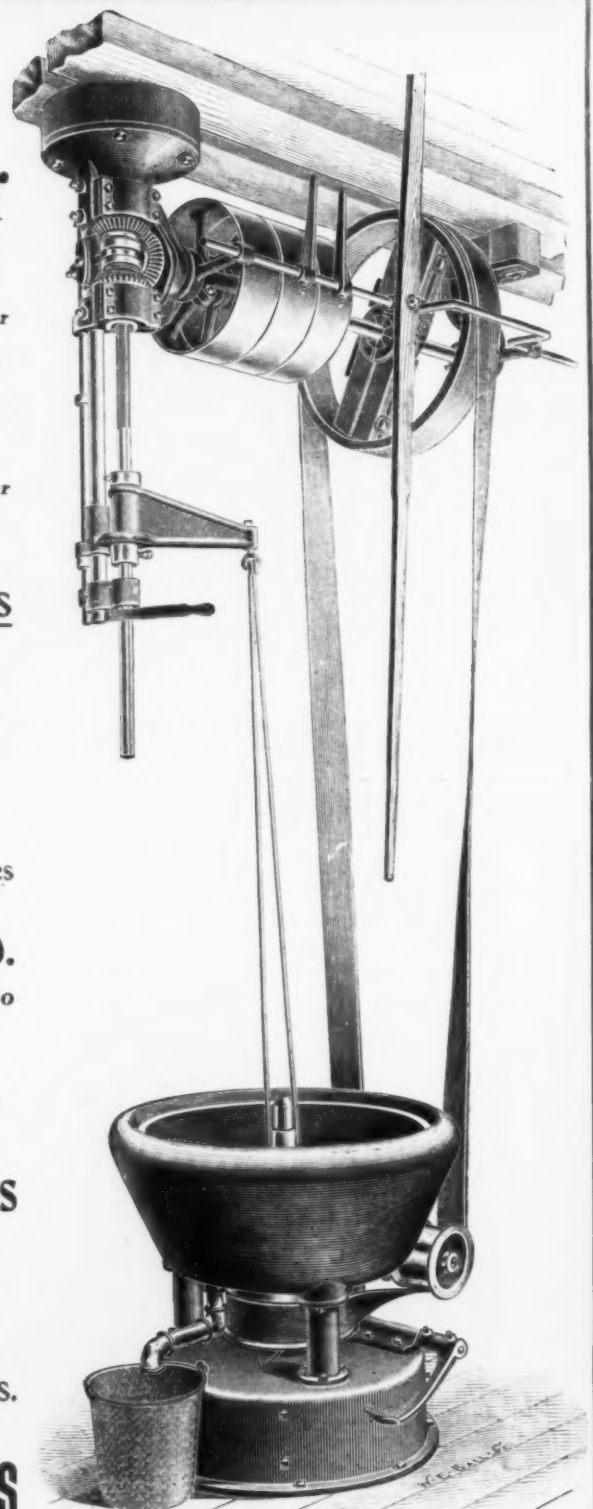
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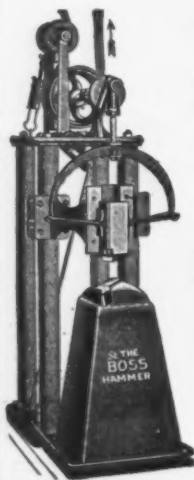
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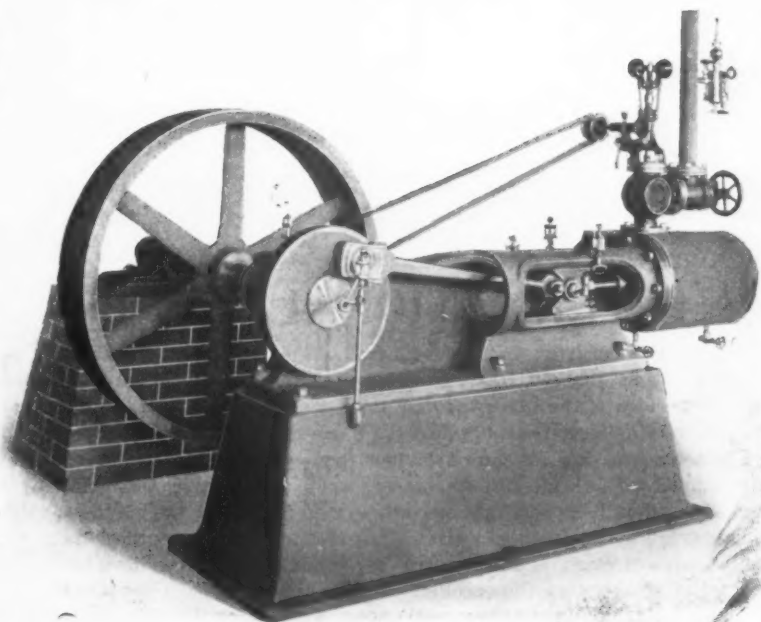
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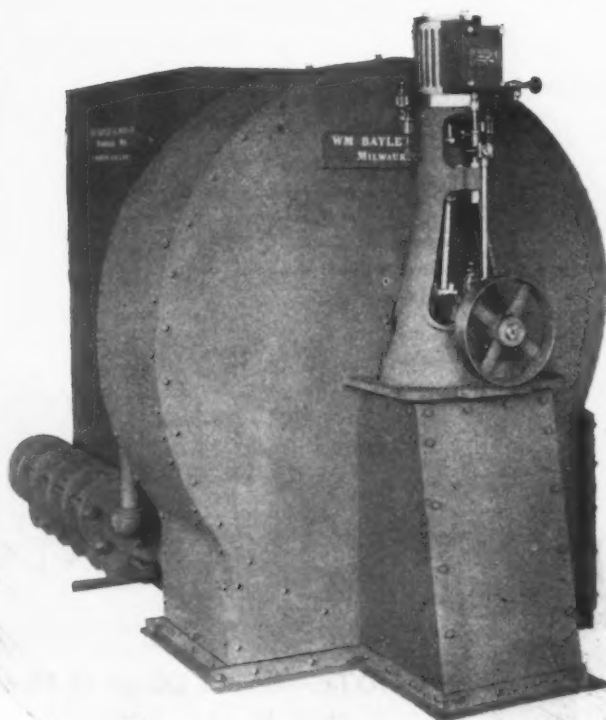
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The International Sprinkler Company, under the control and management of Merchant & Co., Inc., has increased its business at such a rapid rate that the old quarters were soon found entirely inadequate, and a large new mill was accordingly constructed. Some idea of the energy of the management may be gained from the fact that the orders received during the past two months more than equalled the business of the entire twelve months of 1899, a gain of over six hundred per cent. The accompanying cut shows the new factory which has just been finished. It is a very complete plant, thoroughly equipped with all modern appliances, which will enable the company to handle a very large tonnage of pipes, fittings, etc. In fact, its facilities are now second to none in the business. Every one interested in the protection of property against fire will do well to look into the merits of the "International." The sprinkler is approved by the various insurance bureaus throughout the country, while many credentials have been received from leading business houses in this and other cities attesting the excellence of the International's work. All information of this character will be furnished with pleasure to prospective customers. The company will continue to have its main office in this city, and has a Southern office in Atlanta, Ga. In addition it will have the advantage of the active co-operation of all the branch offices and the traveling representatives of Merchant & Co., Inc., which are located in the principal cities of this country. In conclusion it is almost needless to say that with Mr. Clarke Merchant at its head, and the general management in the hands of Mr. Powell Evans, the International Company has a strong practical management, abundant capital and is in the business to stay.

The following partial list of contracts taken in the last few months, covering a wide range of buildings protected by every class of insurance, affords ample proof that the international Company is getting its share of the sprinkler business in the country to-day.—(UNITED STATES REVIEW, Supplement.)

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Electric Storage Battery Co., manufacturers storage batteries, Philadelphia.
Leicester & Continental Mills Co., woolen mills, Philadelphia.
John Wolstenholme & Sons, manufacturers worsted yarn, Philadelphia.
Hotel Walton, Philadelphia.
Quaker Clay Dye Works, Philadelphia.
Hensel-Corlady, repeat order, woolen mills, Philadelphia.
Smith, Kline & French Co., druggs, Philadelphia.
William Steele & Sons, Peter Woll, repeat order, Philadelphia.
Estate C. J. Graham, Philadelphia.
Robert Forrester, manufacturer of leathers, Philadelphia.
George W. Smith & Co., cabinet makers, Philadelphia.
National Publishing Co., Philadelphia.
Ashley & Bailey Co., manufacturers of silk, York.
Nolde & Horst, knitting mills, Reading.
John Gay's Sons, Philadelphia.
Tuttleman Bros. & Faggen, Philadelphia.
Germantown Spinning Co., Philadelphia.
Bernstein Mfg. Co., manufacturers metal bedsteads, Philadelphia.
Peter Wolf & Sons, Philadelphia.
Greaves Bros., Philadelphia.
Marka Bros., repeat order, department store, Philadelphia.
John T. Bailey & Co., manufacturers bags, rope and twine, Philadelphia.
J. Kitchman, manufacturer carpets, Philadelphia.
George Lasher, Philadelphia.
Enterprise Mfg. Co., manufacturers hardware specialties, Philadelphia.
R. T. Moorehouse, manufacturer of paper, Philadelphia.
Pennsylvania Salt Mfg. Co., manufacturers of chemicals, Natrona.
J. S. Thorne, Philadelphia.
J. R. Jones, Philadelphia.



FACTORY, PHILADELPHIA.

Dorman Bros., manufacturers carpets, Philadelphia.
Milbourne Mills, Philadelphia.
W. C. Urner & Co., Spring Grove.
Hess's Mills, Philadelphia.
Thomas Miles Building, office building, Philadelphia.
T. B. Rice, repeat order, Philadelphia.
Standard Hosiery Co., Philadelphia.
George Watkinson & Co., manufacturers rubber boots and shoes, Philadelphia.
Dill & Collins, Philadelphia.
Lehigh Valley Silk Mills, Coplay.
Cambria Steel Co., manufacturers steel, Johnstown.
Otto Gas Engine Co., manufacturers engines, Philadelphia.

NEW JERSEY.

Crescent Belting & Padding Co., repeat order, manufacturers rubber goods, East Trenton.
Philadelphia Watch Case Co., Zarbrugg Co., Riverside.
Riverside Metal Co., Riverside.
Millville Mfg. Co., cotton mills, Millville.
Johnson & Johnson, New Brunswick, manufacturing chemists.

NEW YORK.

Buffalo Forge Co., Buffalo.

TENNESSEE.

Harriman Cotton Mills, Harriman.

MARYLAND.

Sharpe & Dohme, druggs, Baltimore.
American Tobacco Co., Feiguer Branch, Baltimore.

DISTRICT OF COLUMBIA.

Stumpf Bedding Co., manufacturers metal bedsteads, Washington.

VIRGINIA.

Richmond Locomotive & Machine Works.

Cotton Oil & Fibre Co., Norfolk.

NORTH CAROLINA.

Patterson Textile Co., cotton mills, Roanoke.

Rapids.

Roanoke Mills Co., cotton mills, Roanoke.

Rapids.

Ashley & Bailey Co., manufacturers silk, Fayetteville.

Nokomis Cotton Mills, Lexington.

SOUTH CAROLINA.

Buffalo Mills, cotton mills, Union.

Cheswell Cotton Mills, cotton mills, Westminster.

Capital City Mills, cotton mills, Columbia.

Laurens Furniture Co., Laurens.

Morgan Iron Works, Spartanburg.

Spartanburg Warehouse Co., Spartanburg.

TEXAS.

American Cotton Spinning Co., Dallas.

Roxton Cotton Oil Co., Roxton.

McKinney Cotton Oil Co., McKinney.

CONNECTICUT.

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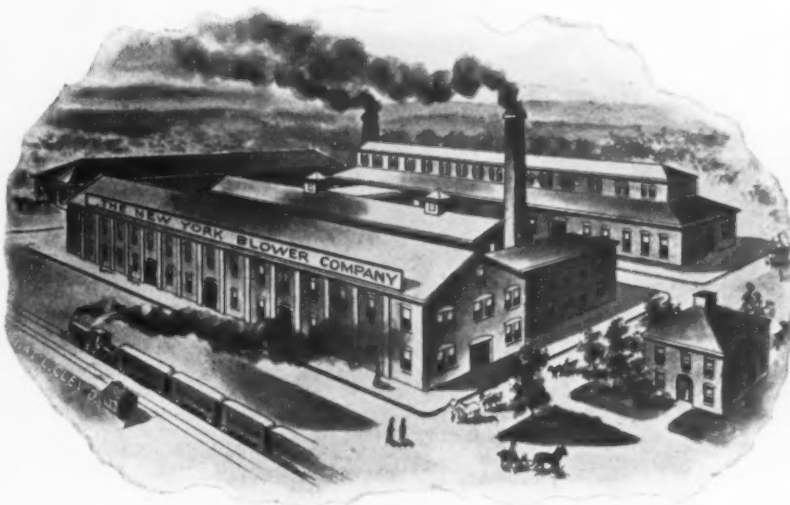
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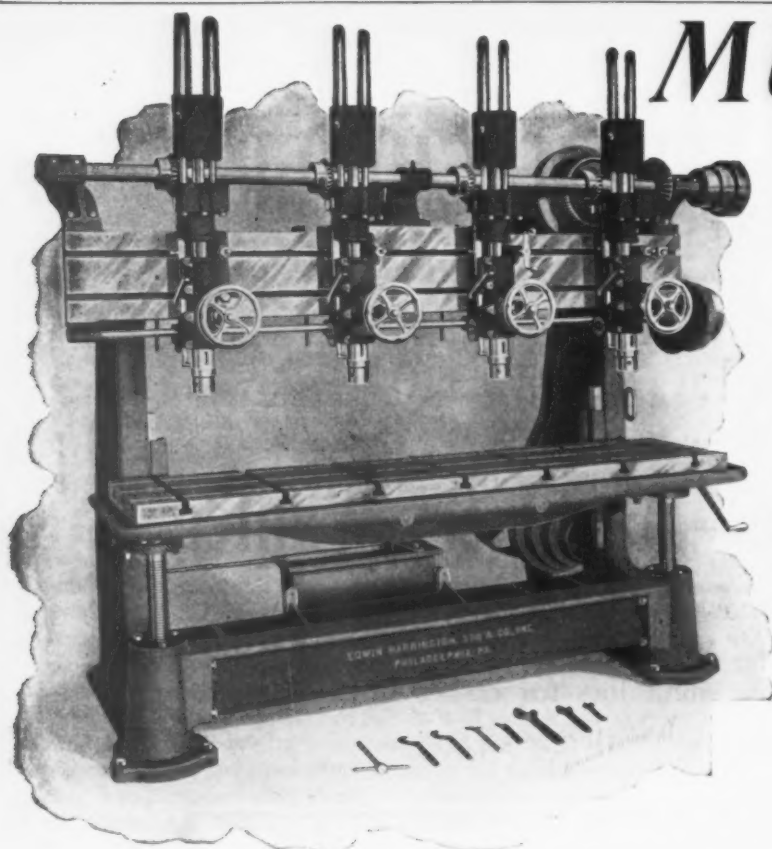
any kind of manufacturing business, and there is plenty of ground for extensions, if necessary.

We are offering the plant at a very low price, and can make an interesting proposition to any one who is interested in it.

We make a special business of the purchase and sale of complete plants and industrial property.

If you have a plant or manufacturing business for sale, if you want to buy a plant, if you intend engaging in any kind of manufacturing, or if you wish to move to a more desirable location in a town where attractive inducements and substantial advantages can be secured, write us.

THIS PLANT IS FOR SALE.



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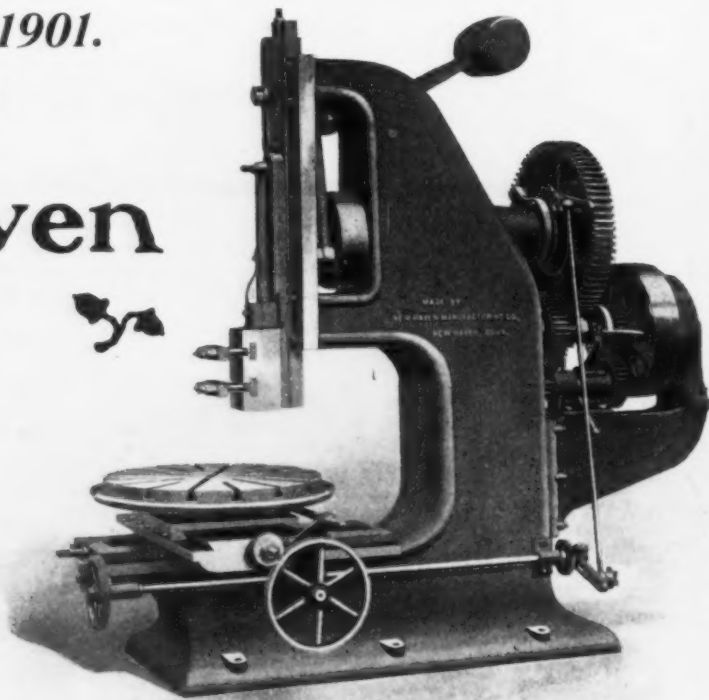
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Adjustable Self-Opening Screw Cutting

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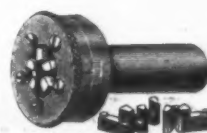
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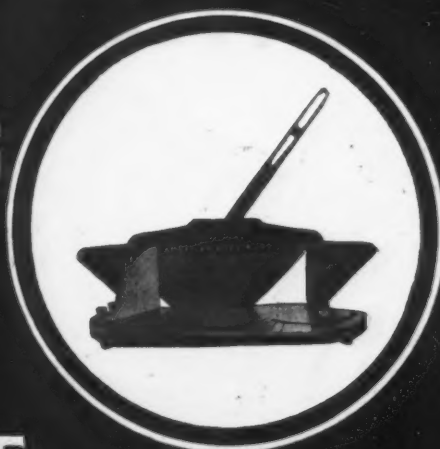
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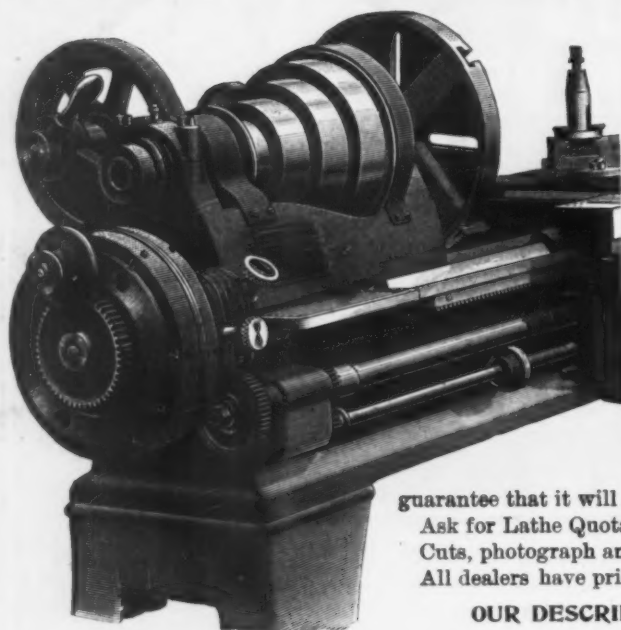
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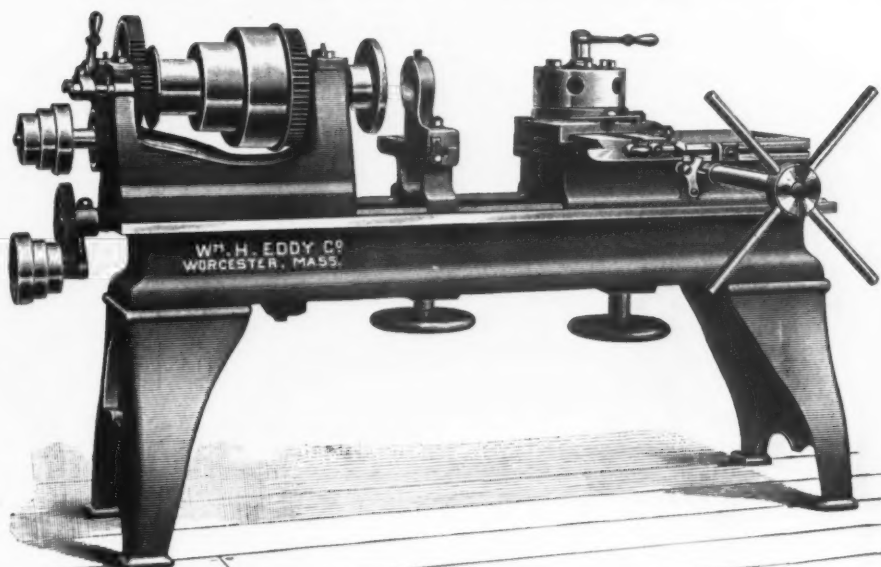
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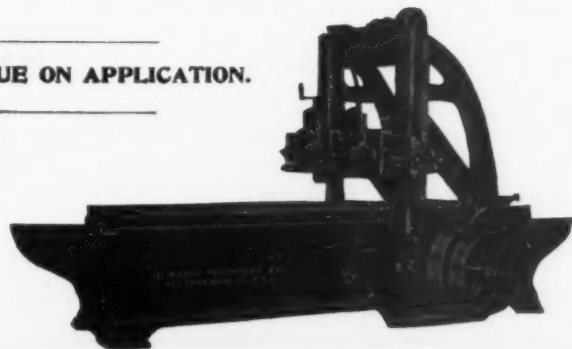
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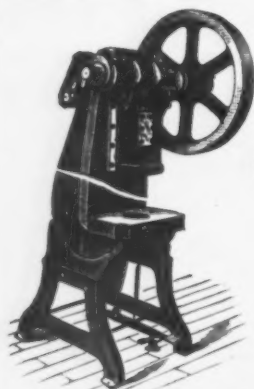
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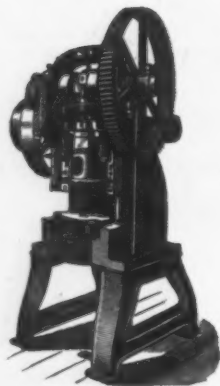
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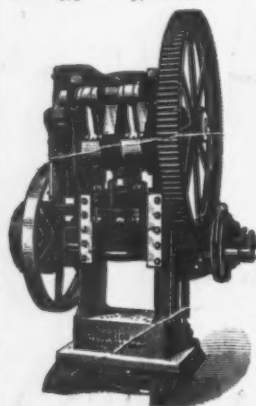


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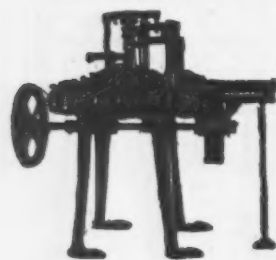
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This difficult piece was made on the machine



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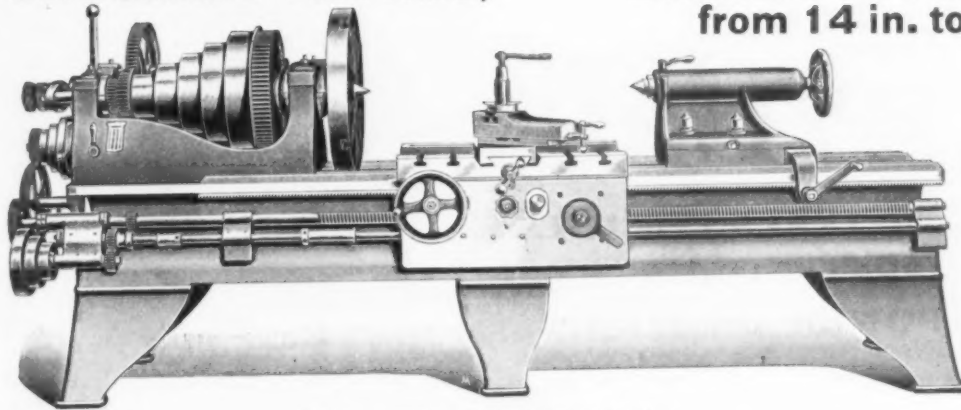
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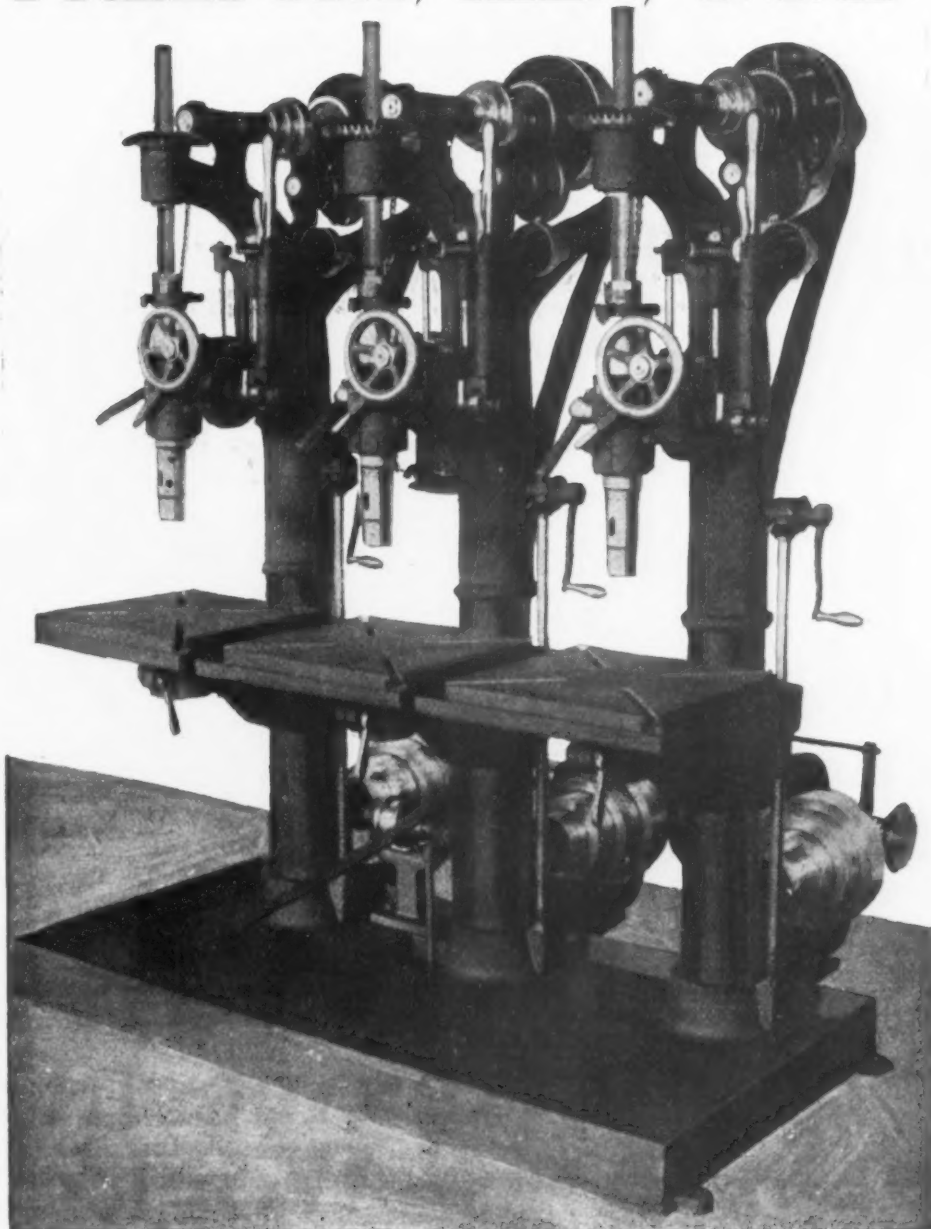
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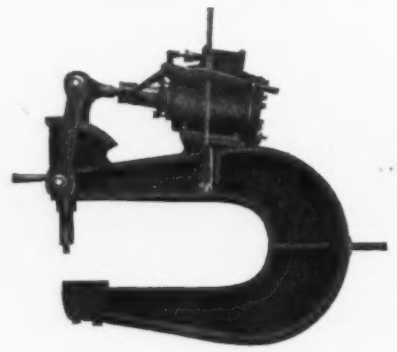
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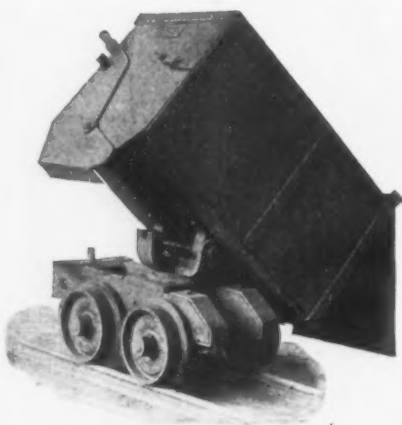
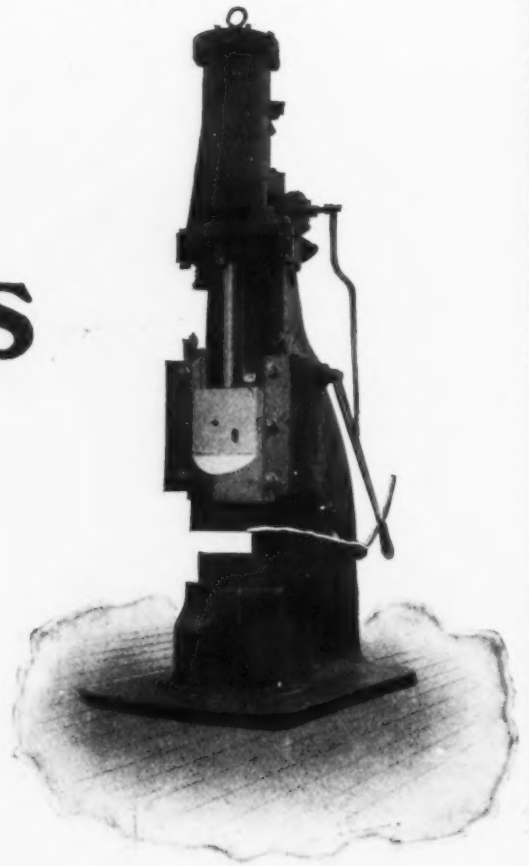
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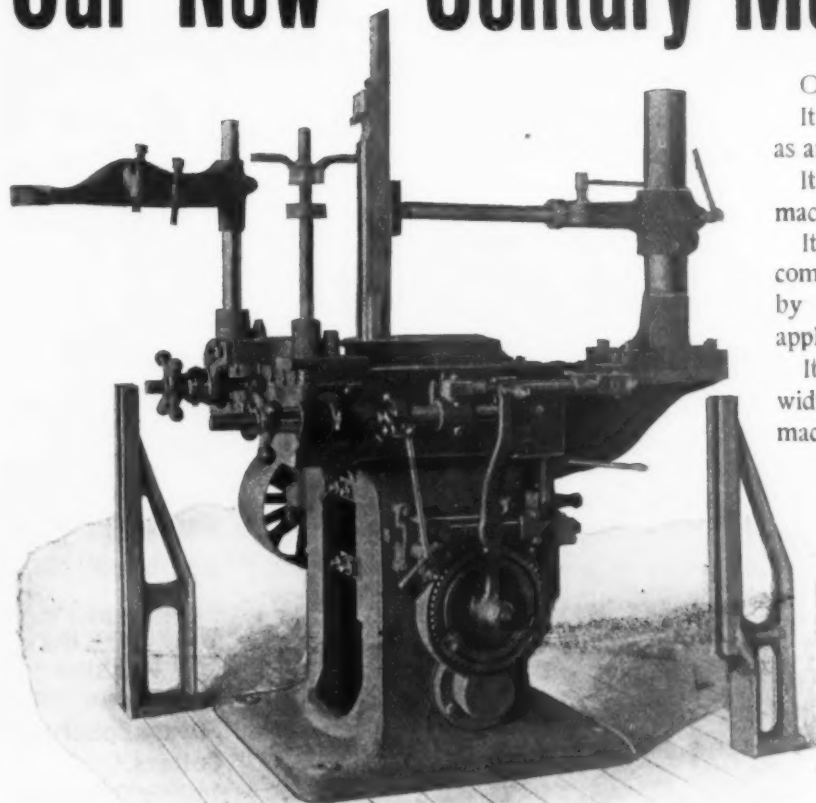


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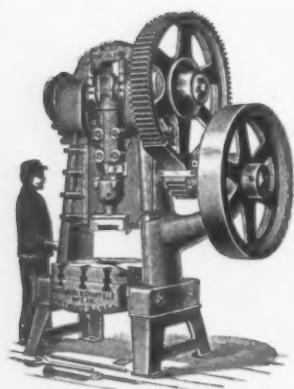
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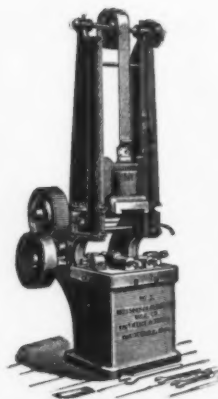
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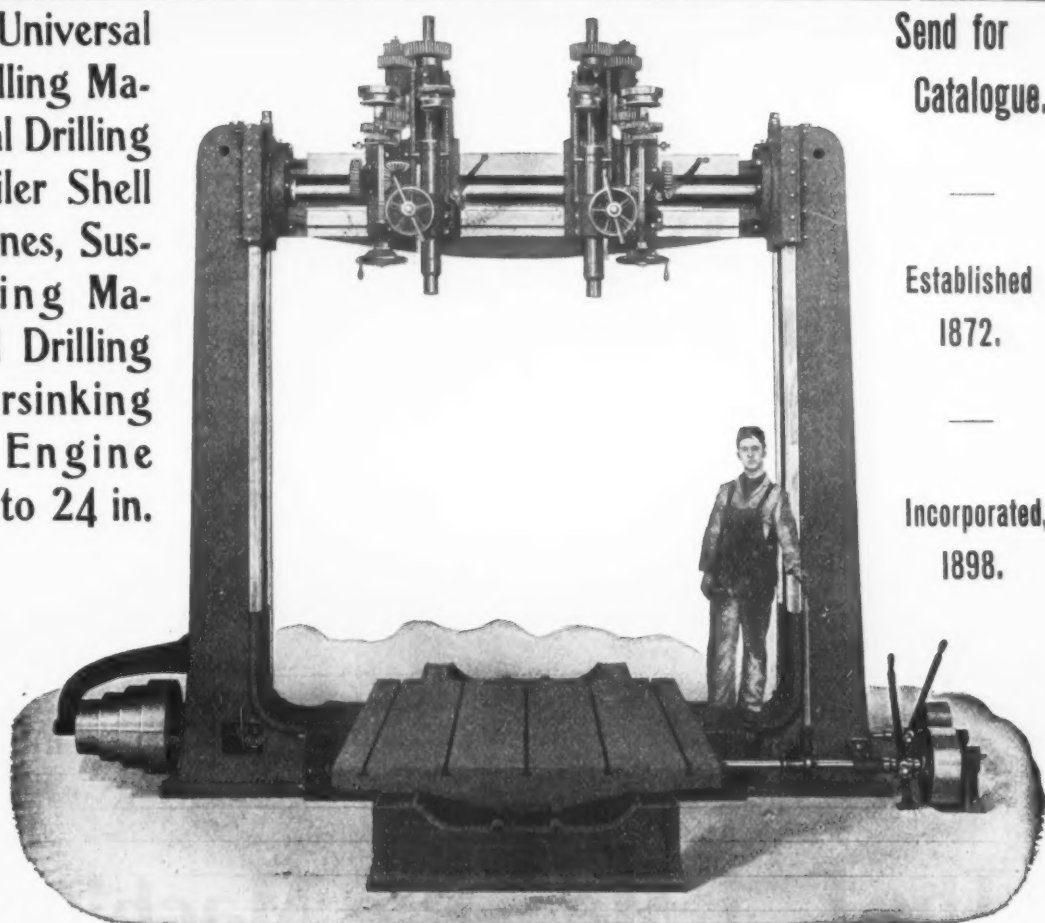
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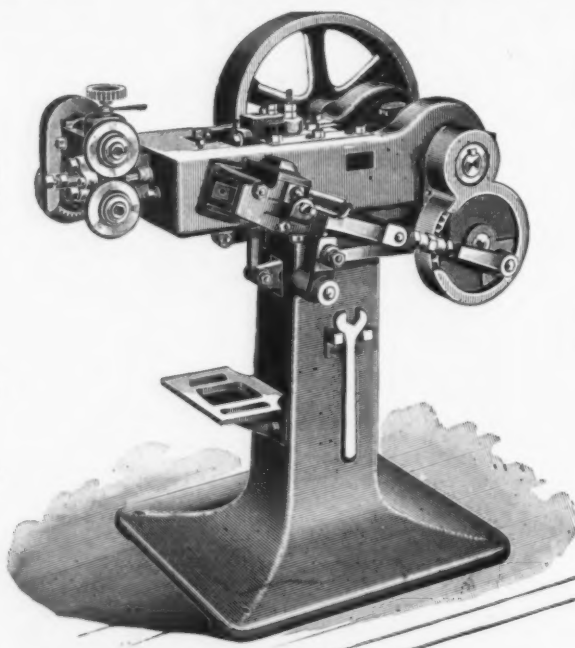
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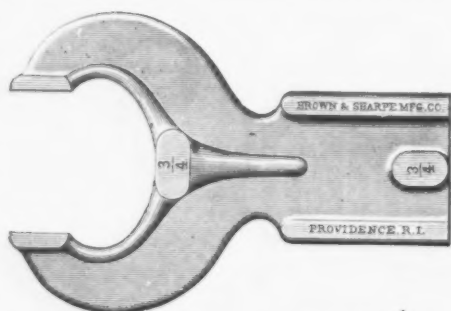
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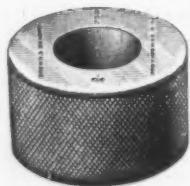
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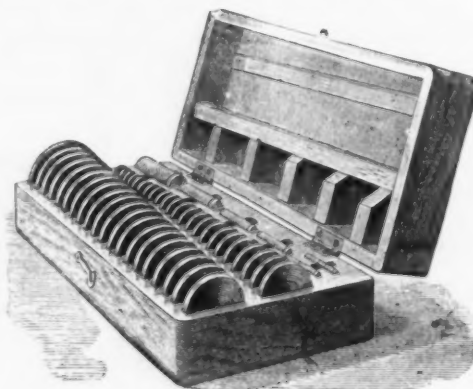
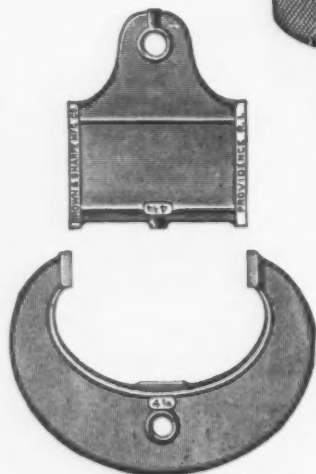
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20 in. Drop Press, 300 lb. hammer, rope countershaft.
Deep Throat Power Presses, 250 lb. wheel, \$75.

Self Feeding Power Press, 1 in. throw, 100 lb. wheel.

10 Large Foot Presses, 20 Screw Presses.

ewelers' Power Rollers, powerfully geared.

Extra facilities for making dies. Estimates furnished.

WANTED.

3000 ft. 3 in., 3500 ft. 3 1/4 in., 5000 ft. 4 in. and 2000 ft. 5 in. second-hand Gas Pipe; 100 ft. 4 in. x 18 ft., 200 ft. 4 1/2 in. x 16 ft. and 200 ft. 5 in. x 16 ft. second-hand Boiler Tubes. **A. F. BARTLETT & CO.,** Saginaw (East Side), Mich.

Investments

are offered by J. H. HILLMAN & SON, Empire Building, Pittsburg, Pa., in the following first-class properties:

COAL LANDS WITHIN TWENTY
miles of Pittsburg.

CONNELLSVILLE COKE OVENS AND
coal lands.

ONE HUNDRED THOUSAND ACRES
of undeveloped low priced Virginia coal lands.

THREE COAL MINING PLANTS IN
West Virginia. Now in active operation.
Sited for shipments to tide water and to the lakes.

FIFTY COKE OVENS AND COAL
mine on the main line of the Pennsylvania Railroad.

SOMERSET COUNTY COAL LANDS.
Excellent location for shipments to tide water.

MANUFACTURING PROPERTIES
and sites near Pittsburg and in the Monongahela and Allegheny Valleys.

MODERN ROLLING MILL.

FIVE THOUSAND ACRES OF COAL
in Center County, Pa., on the Beach Creek Railway. Suitable for shipments East and to Buffalo.

TEN THOUSAND ACRES OF UNDE-
veloped coal land on the main line of the Pennsylvania Railroad. Has four veins of coal. Estimate shows over 80,000,000 tons of coal.

FIVE THOUSAND ACRES OF THICK
vein coking coal adjoining the Connelville region. Nine foot vein in Fayette and Green Counties. These lands offer the best investments now before the American public.

CANADIAN LOW PHOSPHORUS
iron ore mines in operation.

LAKE SUPERIOR (MESABA) IRON
ore mine. Ready for operation.

BLAST FURNACES IN PENNSYLVANIA.

No. 1 capacity, 300 tons daily. Now running.
No. 2 capacity, 200 tons daily. Both make a handsome profit. Can be turned over promptly. Near Pittsburg.

FIRST-CLASS CHARCOAL BLAST
Furnace.

For full information address

J. H. HILLMAN & SON,

Empire Building,
Pittsburg, Pa.

BLOWER BARGAINS.

ROOTS', second hand, bought, sold or exchanged.

All my blowers are overhauled by expert blower machinists.

I do not advertise a "fake" list of blowers not in my possession; my stock is constantly changing.

Write for particulars and prices.

H. M. PAPWORTH,

Ground Floor, 109 Liberty St., New York City.

WANTED.

A quantity of Cast Iron Floor Plate. Send price and size to
ROCKAWAY IRON & STEEL CO.,
Rockaway, N. J.

FOR SALE. Immediate Delivery.

CORLISS ENGINES.

1 34 x 60 Right hand Horizontal Engine with 24 ft. diameter, 30 ton flywheel.
1 34 x 60 Left hand Horizontal Engine with 23 ft. diameter, 40 ton flywheel

SLIDE VALVE ENGINES.

1 7 x 10 "C. C." Engine.
1 8 x 12 " "
1 10 x 12 " "
1 12 x 16 " "
1 6 x 6 Vertical Engine.

BOILERS.

1 48 x 9 Vertical Tubular Boiler.
1 35 H. P. Portable Boiler.
1 60 H. P. "

STEAM HAMMERS.

12,000 lb. Single Frame Steam Hammer.
12,500 lb. Double Leg Steam Hammer.
18,000 lb. Double Leg Steam Hammer.
1 500 lb. Morgan Double Leg Steam Hammer.
1 600 lb. Morgan Single Frame Steam Hammer.
3 25 in. Cylinder Helve Hammers.

LOCOMOTIVES.

2 7 x 12, 36 in. gauge, 4 wheel, 8 ton Saddle Tank Locomotives.
22 9 x 14, 36 in. gauge, 4 wheel, 12 ton Saddle Tank Locomotives.
19 x 14, 36 in. gauge, 6 wheel, 12 ton Saddle Tank Locomotive.
1 10 x 16, 36 in. gauge, 6 wheel, Saddle Tank Locomotive.
8 10 x 16, 36 in. gauge, 4 wheel, Saddle Tank Locomotives.

HEATER.

350 H. P. RIBLET Feed Water Heater.

BILLET SHEAR.

1 24 in. Blade, Lewis Foundry & Machine Co., Billet Shear. Will cut 6 in. square cold.

AIR COMPRESSORS.

2 16 x 16 x 16 Alland Air Compressors.
1 12 x 16 x 18 Dean Air Compressors.

W. J. CARLIN COMPANY,

610, 611 Lewis Bldg., Pittsburgh, Pa.
NEW YORK OFFICE:
514, 515 Park Row Bldg., New York, N. Y.

FOR SALE.

A large quantity of Ivory Button Machinery, Laundry Machinery and Printing Presses, one large size Ames Gear Cutter, Turret and Fox Lathes, Die Sinking Machine, Profiling Machine, Engine Lathes, Planers and Steam Engines and Boilers.

HANNAN & FINTON,

Springfield, Mass.

FOR SALE.

Two No. 2 Brown & Sharpe Plain Grinding Machines. For prices and particulars apply to

THE THOMAS & LOWE MCHY. CO.,
MACHINERY, TOOLS AND SUPPLIES,
PROVIDENCE, R. I.

BARCAINS.

One 16 in. x 24 in. Penna. Iron Works Engine, practically new.
One 14 1/2 in. x 22 in. Hor. Cut-off Engine.
One 7 in. x 10 in. Double Cylinder Double Drum Hoisting Engine and Boiler.
One 7 in. x 10 in. Single Cylinder Single Drum Hoisting Engine and Boiler.
Corliss, Automatic and Plain Slide Valve Engines.
Hor. and Vertical Boilers, all descriptions.

LOVEGROVE & CO.,

143-145 N. Third St., Phila., Pa.

Wanted to Make

We have a complete modern manufacturing plant near Boston, equipped with **Power Presses, Automatic Screw Machines, Nickel Plating and Polishing Plant** and want to correspond with parties having articles that can be made in such a factory. Address

"W,"

care *The Iron Age*, 70 Kilby Street, Boston, Mass.

MACHINERY BARGAINS.

1 14 x 5 Lodge & Shipley Lathe.
1 30 x 14 New Haven, comp. rest.
1 40 in. Chucking Lathe, Turret.
1 25 lb. Justice Hammer.
1 Bolt Cutter, two heads.
3 Speed Lathes.
Dynamos of 50, 100, 150 and 200 lights.
Motors—3, 5, 15, 30 H. P.

THE RACINE MACHINERY CO.,
Racine, Wis.

FOR SALE.

All the tools
of the

WARREN RADIAL DRILL CO.,

AT WORCESTER, MASS.

For prices and list write

HILL, CLARKE & CO.,

156 Oliver St., Boston, Mass.

READ CAREFULLY.

For Sale-Bargains.

40 H. "Otto" Gas Engine.....	140
20 H. "Otto" Gas Engine.....	200
10 H. Sterling, Charter Gas Engine.....	200
14 x 20 Slide Valve Engine.....	200
25 H. "Russell" Horizontal Steam Engine.....	100
6 H. Upright "Krieftel" Engine.....	60
50 H. Horizontal Tubular Boiler.....	225
26 H. Portable Engine and Boiler.....	120
6 H. Upright Engine and Boiler, NEW.....	110
60 in. "Huyett & Smith" Ventilating Fan.....	40
No. 1 "Sturtevant" Blower.....	12
12 in. Upright Drill Press.....	15
300 H. "Austin" E. Heater.....	120
100 H. "Murphy" Pressure Heater.....	75
30 H. "Kroeschell" E. Heater.....	60
34 x 10 "Putnam" Engine Lathe.....	250
Complete Belt Power Elevator.....	100
68 in. x 30 in. Steel Rim Double Arm Pulley.....	35
30 in. x 30 in. Steel Rim Friction Clutch Pulley.....	35
28 in. x 10 in. Steel Rim Friction Clutch Pulley.....	30
15 H. Firebox Horizontal Boiler.....	35
20 H. Firebox Horizontal Boiler.....	150
30 H. Center Crank Engine.....	90

All guaranteed.

PARADOX MACHINERY CO., 181 E. Division St., Chicago.

PARTIAL LIST OF SECOND-HAND MACHINERY

IN STOCK.

1 150 H. P. Buckeye Automatic Engine.	
1 125 " "	
1 80 " Baker " "	
1 80 " Atlas " "	
1 80 " Payne " "	
1 20 " Armstrong & Sims Automatic Engine.	
2 120 " 66 in. x 18 ft. Tubular Boilers.	
1 80 " 60 in. x 16 ft. " "	
1 75 " 54 in. x 18 ft. " "	
1 60 " 54 in. x 14 ft. " "	
1 12 x 12 x 10 Worthington Duplex Pump.	
1 12 x 7 x 12 Smith-Valle Duplex Pump.	
1 14 x 10 x 14 Knowles Pattern Single Pump.	
2 No. 6 Morris Machine Works Centrifugal Pumps, and a large number of smaller engines, boilers, pumps, etc.	

RAINIER & WILLIAMS,

63 So. Canal Street, Chicago, Ill.

Mill Engines.

1 26 & 48 x 60 Cross Compound, Geo. H. Corliss with sectional band wheel, 30 ft. diam. by 7 1/2 inch face, complete with condenser.
1 18 in. x 42 in. Allis Corliss Condensing, wheel 18 ft. diam., 22 in. face.
1 16 in. x 42 in. Allis Corliss.
1 16 1/4 in. x 25 in. x 15 in., Cross Compd. Armstrong & Sims.
1 18 in. & 30 in. x 16 in. Westinghouse comp'd.
3 16 in. & 27 in. x 16 in. Westinghouse comp'd.
1 13 in. x 12 in. N. Y. Safety Automatic.
2 13 in. x 14 in. Watertown " "
1 14 in. x 13 in. Armstrong & Sims " "
1 15 1/4 in. x 16 in. N. Y. Safety " "
4 16 in. x 16 in. Ball " "
2 16 in. x 16 in. Cooper " "
5 18 1/4 x 18 in. Ideal High Speed Auto.
1 40 in. x 72 in. Geo. H. Corliss Engines. Shaft 30 in. dia., 8 ft. between center of bearings. Wheels 24 ft. dia., 50 ton.

BOILERS.

2 375 H. P. Sterling Water Tubes for 150 lbs.
2 175 H. P. " " " " " "
2 200 H. P. National " " " " " "
2 72 in. x 16 ft. Return Tubulars " " " "

CONDENSERS.

1 600 H. P. Snow Condenser.
3 325 H. P. Davidson Condensers.

Rossiter, MacGovern & Co.,

Electrical and Steam Machinery.

141 BROADWAY, N. Y. Factory, Brooklyn.

SEND FOR CATALOG.

Engine Bargains.

80 x 72 Hamilton Corliss.
80 x 72 Harris Condensing Corliss.
94 x 48 Hamilton Corliss.
90 x 48 Hamilton Corliss.
18 x 42 Harris Corliss.
16 x 42 Fraser & Chalmers Corliss.
15 x 24 Watertown Automatic.
14 x 30 Cummer 4 valve Automatic.
18½ x 26 Buckeye Automatic.
12 x 22 x 18 Payne Tandem Compound Automatic.
12 x 24 Cooper Slide Valve.
12 x 30 Mansfield Slide Valve.
12 x 18 Slide Valve.
10½ x 12 Phoenix Automatic.
10 x 12 Slide Valve.
The above are all in first-class condition and ready for shipment.

A. L. DAWSON & CO.,
27-31 W. Washington Street, Chicago, Ill.

For Quick Delivery.

SINGLE VERTICAL PUNCHES.

42 in. throat, 1½ in. through 1½ inch plate.
30 in. throat, ¾ in. in ¼ inch.
24 in. throat, ¾ in. in ¼ inch.
26 in. throat, 1 in. through 1 in. plate.
30 in., two 1-16 in. holes in 1 in. metal; for bridge work.

SPLITTING SHEARS.

For ¼ in. and ½ in. plate.

DOUBLE ANGLE SHEAR for 4 x 4 x ¼ in. angles.
Plate-edge Beveling Shear, for ¾ in. plate.
Gate Shear and Multiple Punch, 78 in.

HORIZONTAL PUNCH, 6 in. throat, ¾ in. through ¼ in.

BENDING ROLLS, 100 in., for 1½ in. plate.

Hand Spacing Table, 8 ft.
Boiler Makers' Flanging Clamps, 10 ft.
Steam Riveter, 6½ ft. gap.
Plate Planer, 6 ft. cut.
Duplex Vertical Engines, 9 x 9.

HILLES & JONES COMPANY,
Wilmington, Delaware.

Desirable Machine Tools.

1 28 in. Lathe, 15 ft. between centres.
1 30 in. Lathe, 12 ft. 6 in. between centres.
1 42 in. Lathe, 13 ft. between centres.
1 32 in. Planer, 8 ft. bed.
1 24 in. Gould & Eberhardt Shaper with Rack Cutting Attachment.
For Sale by

W. C. Johnson & Sons Mach'y Co.,
513 N. Second St., St. Louis, Mo.

Power Presses.

4 No. 74½ Bliss geared.
2 No. 75½ Bliss geared.
1 No. D75 Ferracute geared.
1 No. 56C Toledo geared.
1 No. 58C Toledo geared.
3 Small Presses.
1 Drop Press, 175 lbs., four poppet.
1 No. 4 Long & Allstatter Punch, 7 in. throat.

10 Shapers.
58 Lathes.
135 Screw Machines.
98 Drill Presses.
12 Engines.
8 Planers.
65 Milling Machines.

Write for prices.

Geo. H. Bowler, Williamson Bldg.,
CLEVELAND, O.

Plate Planer.

We offer for immediate delivery,

1 16 ft. PLATE PLANER,
made by William Sellers &
Company, which is in first-
class condition.

Delivery in Central Penn-
sylvania.

WILLIAM A. READE & CO.,

216-217 American Trust Bldg., Cleveland, Ohio.

ENGINES AND BOILERS, FOR SALE.

1 86 in. x 72 in. Wheelock Corliss Engines, each with 50 ton flywheel, one engine pushed to 28 inches.
2 Hazelton Boilers 500 H.P. ea., with automatic stokers.
1 " Boiler 75 H.P.; 25 H.P. Vertical Eng.
2 60 in. x 30 ft. Boilers, 20 6 in. flues, all appurtenances.
2 52 in. x 30 ft. " 14 6 in. " " "
2 26 in. and 1 25 in. Drill Press (new). No. 9 Sturtevant Cupola Blowers.
1 Totten & Hogg 38 in. Roll Lathe, 12 ft. centers, and lot turning tools.
Allen Belted Air Compressor, 50 ft. per minute.
Otis Elevator Engines, 7 in. x 10 in. cylinders.
ST. LOUIS STEAM FORGE & IRON WORKS,
Main and Miller Sts., St. Louis, Mo.

BARGAINS IN SECOND-HAND Electrical Machines.

SPECIAL LIST NO. 1

Arc Dynamos.

2 American Wood, 30 light, 2,000 c. p.
1 Western Electric, 30 " 2,000 c. p.
1 T. H. L. D. 2— 35 " 2,000 c. p.
1 Ft. Wayne Wood No. 6, 35 light, 1,200 c. p.
1 Ft. Wayne Wood No. 8, 75 light, 1,200 c. p.

Alternators.

2 3 A. Slattery, 1,300 light, with
exciters.
2 A35 T. H., 650 light, com-
posite wound, with exciters.

Direct Current, 110 Volts.

2 Edison 60 K. W., 1,100 light.

Send for Complete List of

Dynamos, Generators, Motors, In-
struments, Switches, Lamps, etc.

STEWART ELECTRICAL CO.,
S. E. Cor. Fifth and Sycamore,
CINCINNATI, O.

FOR SALE.

We have lately purchased the site of the Pacific Rolling Mills in San Francisco and are now equip-
ping same with a modern shipbuilding plant. In
consequence, we have on hand and for sale, at a
low price, the following:

One 8 inch, one 10 and one 12 inch Guide Mill, each
complete with housings, guides, boxes, car-
riages, brasses, clamp bars, tongs, etc., etc.,
with full sets of roughing and finishing rolls.

One 18 in. Bar and one Rail Mill.

One 28 in. Beam Rolling Mill.

Also with full sets of Rolls for each mill.

One Charging Machine.

Also one Roll Turning Lathe, double header, for
turning two rolls at same time. Bed 42 feet
long by 5 ft. 6 in. inside way. Swing 3 ft. 9 in.

Four Tool Rests.

Four Roll Neck Rests.

Two Clutches for driving work.

In first-class shape with necessary tools for
same.

Also one Roll Turning Lathe, double header; turns
rolls 6 in. to 18 in. inclusive, two at same time.
Wood Frame, 21 feet long and four feet six
inches wide. Swing 4 feet. Iron guides. Tool
rest and carriage fastened to wood foundation.
Chucks for all sizes of rolls. Tools,
countershafts, etc., all complete.

We have also quite a number of boilers and
engines that have been used throughout the
rolling mill, which we will sell at a low figure.
Write and send for circulars.

RISDON IRON AND
LOCOMOTIVE WORKS,
San Francisco, Cal.

SPECIAL.

1 each 20, 30, 40, 50, 75 Horse Slide
Valve Engines.

Boilers: 10 120 Horse Tubulars.

Dynamos: 1 100 K. W. Direct Connected
1 50 " " "

JOHN E. BEGGS, 47 Cedar St., N. Y.

FOR SALE.

One second-hand Norwalk Air Compressor 14 in.
x 14 in. and 9½ x 16. In first-class condition with
three cutters and all necessary accompaniments.
Can be seen in operation at works.

EVENS & HOWARD FIRE BRICK CO.,
St. Louis, Mo.

STEEL SCRAP WANTED.

7½ in. round or larger. 8 in. long or longer or
equal area of any other shape.

NORTHWESTERN SUPPLY CO.,
Duluth, Minn.

For Sale Cheap Before Removal.

One Corliss Engine, 16x38, made by Hewes
& Phillips. Two Return Tubular
Boilers, 60 x 16. One 200 H. P. Berry-
man Heater. Can be delivered in
January. It can be seen at Kertcher
& Co.'s, Elmira, New York.

Two Horizontal Return Tubular Boilers,
48 in. x 14 ft. Each boiler has 26
4 in. tubes. Boilers are in A1 con-
dition.

One 69 in. x 16 ft. Horizontal Return
Tubular Boiler, has 82 3 in. tubes
and is in A1 condition.

We also have 350 tanks of different sizes.

WM. ECKBOLDS' SONS,
711 E. Girard Ave., Philadelphia.

MACHINERY.

SECOND-HAND, FIRST-CLASS ORDER.
800 lb. Pratt & Whitney board lift automatic Drop
Hammer.

No. 7 Jarecki Pipe Machine.
Garvin Single Spindle Profiler.
14 ft. Boiler Plate Planer.
22½ in. Barnes Drill, Back Geared.
16 x 16 x 4 ft. Hendey Planer.
38 x 38 x 8 ft. Cove Planer.
36 x 36 x 12 ft. Wilson Planer, with two heads.
30 x 30 x 8 ft. Whitcomb Planer.
18 in. Prentice Drill with chuck
20 in. Snyder Drill, power feed, back gear.
P-4 Ferracute back geared press.
14 in. Brown & Sharpe Screw Machine, without
wire feed.

18 in. Screw Machine with Chard turret, Davis
& Egan M. T. Co.

No. 1 Sensitive Drill Power Feed, Norton & Jones.

No. 3 Garvin Miller without arm, vise or vertical
fixture.

No. 1 Cincinnati Full Universal Milling Machine.

No. 1 Davis Key-Seater.

14 in. x 8 ft. Perkins Engine Lathe, plain rest.

14 in. x 6 ft. Lodge & Davis Engine Lathe with
compound rest, 30 in. x 22 ft. New Haven Mfg.
Co. Lathe with compound rest.

Woodward & Rogers Horizontal Tapping Machine.

No. 2 Garvin Horizontal Tapping Machine.

24 in. x 30 ft. bed, New Haven Lathe, cpd. rest.

16 in. Boynton & Plummer Shaper.

16 in. Lodge & Davis Shaper.

28 in. New Haven Drill, B. G. & P. F.

2 in. Saunders Pipe Machine.

No. 5 Long & Allstatter Punch and Shear com-
bined.

20 x 42 Corliss Engine, right hand (Hamilton).

20 x 42 " " left hand

18 x 42 Allis Corliss Engine, right hand, can be
changed to left hand.

Write us for any machinery wanted, or if you
wish to exchange or sell.

C. C. WORMER MACHINERY CO.,
Ft. of Shelby Street, Detroit, Mich.

FOR SALE.

18 in. x 48 in. Allis-Corliss Engine.

150 H. P. Cross-com. Armington & Sims Auto. Eng.

9 x 9 O. and S. Vertical Engine.

9 x 12 Nagle Engine, center crank.

11 x 18 H. S. & G. Plain Slide Valve Engine.

12 x 18 H. S. & G. Plain Slide Valve Engine.

12 in. x 36 in. Babcock and Wilcox Auto. Engine.

12 in. x 16 Center Crank Slide Valve Engine.

12 in. x 7 in. x 10 in. Worthington Duplex Pump.

Also a number of smaller Engines and Pumps.

THE E. H. WACHS CO. 133 Indiana St., Chicago.

BARGAINS IN MACHINERY.

One pair of 14 x 24 mine **HOISTING EN-
GINES.**

CAST IRON PIPE, from 6 in. up to 16 in.
in diam.

WROUGHT IRON PIPE, all sizes up to
6 in. diam.

One 30 in. gauge **LOCOMOTIVE** and 17 30 in-
gauge **CARS.**

GRANT & WILLIAMS, Park Row Bldg., N. Y.

BOILER WORKS

With the latest machinery and equip-
ment, well located and established. Good
reason for selling. Address

"H. H. G.,"

Care The Iron Age, New York.

Harrisburg, Pa. An Ideal Shipping Point

Have you ever experienced the need of a cen-
tral distributing point for the eastern field? Many
manufacturers now carry stocks of goods here.
The best located man often gets the trade. You
can RENT Large, Centrally Located Warehouses
with attendants, of us, or you can BUY our former
plant (we now occupy our new factory), well lo-
cated for manufacturing or warehouse purposes.
HARRISBURG FOUNDRY AND MACHINE WORKS

FOR SALE.

One-half interest in up-to-date Hardware Store.
Clean stock. Thrifty manufacturing city of
20,000. Address "HALF," care The Iron Age,
New York.

FOR SALE.

SPECIAL ENGINES.

- 1 14 in. x 20 in. (Vertical) Slide Valve.
- *1 14 in. x 30 in. Keystone Corliss (Brand new).
- *1 11 in. and 19 in. x 24 in. Tandem Comp'd "Buckeye" (latest type) with condenser.
- *1 23 in. x 48 in. Geo. H. Corliss make.
- *1 24 in. x 36 in. Mackintosh, Hemphill & Co.
- *1 26 in. x 60 in. Tangye Bed type.
- 1 Crane Elevator Co. Modern Elevator Engine.

BOILER.

- 1 Horizontal Tubular, 72 in. x 16 ft. with 84 3/4 in. tubes, approved for 100 lb. pressure, complete.

SHAFTS and PILLOW BLOCKS.

- 25 Very fine forged shafts, finished all over, 10 in. diam. to 16 in.

FLY WHEELS.

For Balance and for Belts.

SMOKE STACK.

- Very fine steel self-supporting stack, 64 in. diam., 100 ft. high, with base casting, ornamental top and ladder.

PUNCH.

- 1 Ferris & Miles make.
- 1 in. hole through 1 in. iron; 23 in. throat.

SHEARS.

- 1 New Alligator Shear with capacity up to 2 1/2 in. Cold Billets, or for Scrap Cutting. Knives 14 in. long.

LOCOMOTIVES, New and Second hand.

*Signifies Right-hand.

B. M. EVERSON.

German Nat. Bank Bldg. (6th and Wood),
PITTSBURG, PA.

Sales Agent for
Baldwin Locomotive Works, Phila.

Foundries for Sale.

Foundry site with excellent water power at Medina, N. Y.

Fine foundry buildings at Allentown, Pa., with railway siding.

Fine foundry buildings at Sing Sing, N. Y., with rail and water facilities.

Address "NASSAU,"

care The Iron Age, New York.

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To represent manufacturers of Staple or Heavy Hardware, Iron or Steel, Nuts and Bolts, &c., &c. Either by carrying a stock in New York City, or by selling direct from factory. Located in the centre of the Hardware district, we have ample storage room, office and large sales room on GROUND floor. Address

CHAS. J. STEBBINS & CO.,
103 Reade Street, New York City.

GAS AND GASOLINE ENGINES.

All sizes and makes, from 1/4 to 35 horse power, new and slightly used. Some modern makes sold for much less than first cost, older types rebuilt at our own works and sold fully guaranteed very cheap. State your wants.

Machinery of all descriptions bought, sold and exchanged.

CALLESON MOTOR COMPANY

270 West St., New York City.

FOR SALE.

- 1 DA Iron Split Pulley, 18 ft. x 41 in. x 10 in. bore.
- 1 DA Iron Split Sheave, 12 ft., 18 1/2 inch grooves, 10 in. bore.
- 1 DA Solid Iron Pulley, 5 ft. x 42 in. x 5 7/16 in. bore.
- 6 Housings for 9 to 12 in. rolls.
- 1 Triple Continuous Housing, for 9 in. rolls.
- 1 Triple Continuous Pinion Housing, with or without pinions. Address

"BOX No. 8,"

care The Iron Age, Fisher Building, Chicago, Ill.

PUBLIC SALE OF

Complete Foundry Plant

situated on main line of Penn. R.R., between New York and Philadelphia. Lands, Buildings, Fixtures and Machinery of the New Brunswick Foundry Co., at New Brunswick, New Jersey, will be exposed to sale at public vendue on Tuesday, Jan. 8th, 1901, at 2 P. M., at the office of the company, New Brunswick, N. J.

For particulars address

JOHN H. CONGER, Receiver.
New Brunswick, N. J.

FOR SALE.

A complete Wire Nail Plant, consisting of German Spring Machines with the American Improvements, etc.

R. S. ARMSTRONG & BRO.,

Atlanta, Ga.

BARGAINS.

- 1 No. 1 Brown & Sharpe Universal Milling Machine
- 1 Semi-Universal Miller, Worcester Machine Co.
- 1 26 x 26 x 10 Schenk Planer.
- 1 18 x 18 x 5 with chuck.
- 1 16 in. D. T. Q. Gould & Eberhardt Shaper.
- 1 12 in. Shaper, heavy machine, Michaels.
- 1 5 1/4 in. Van Nostrom Shaper.
- 1 20 in. heavy Drill, Gould & Co.
- 1 13 in. Sensitive Drill and Chuck, W. & R.
- 1 36 in. heavy Bk. Gd. Drill, Massinet Mfg. Co.
- 2 No. 2 Garvin Screw Machines.
- 1 Gray Screw Machine.
- 1 13 in. x 6 ft. bed, No. 6 Barnes Engine Lathe.
- 1 22 in. x 16 ft. Engine Lathe.
- 1 24 in. x 12 ft. " " New Haven Mach. Co.
- 1 24 in. x 10 ft. " " " " " "
- 1 20 x 8 ft. " " " " " "
- 1 18 x 8 ft. " " Michaels.
- 1 16 x 6 ft. " " Blaisdell.
- 1 15 x 6 ft. " " Star Tool Co.
- 1 14 x 6 ft. " " Pratt & Whitney.
- 1 Bliss Punch, 2 in. stroke.
- 1 Double Punch, 5/8 in. stroke.
- 1 Graves Hydraulic Elevator and Car, complete, capacity 3,000 lbs.
- 1 2 x 3 Gould Triplex Power Pump.
- 1 100 H.-P. Sterns Tubular Boiler, complete, flush front, fitted with Hawley Down Draft.

MACHINISTS' SUPPLY CO.,
Rochester, N. Y.

TWIST DRILLS.

For Sale. A lot of about 2000 new Twist Drills, straight and taper shank. Size from 1/4 in. to 2 in. diameter graduating by 64th. Will sell very cheap.

M. P. COLEMAN,

95 Haverhill St., Boston, Mass.

FOR SALE.

Tools lately in use in Boiler Manuf'g Plant.

- 1 40-ton 36 in. Gap Hydraulic Portable Riveter.
- 1 set 20 ft. Niles Rolls.
- 1 13 in. x 22 in. x 13 in. Westinghouse Engine
- 1 18 in. x 5 1/2 in. x 18 in. Barr Pump for 500 lbs. pressure.

For additional information, address

ESTATE OF WM. G. WARDEN,
1012 Witherspoon Bldg., Philadelphia.

BLOWERS.

- Root Blowers Nos. 1, 2, 3, 4, 5 and 6.
- Baker " " 4, 4 1/2, 5 and 7.
- Sturtevant Blowers Nos. 2, 3, 5 and 6.

All thoroughly overhauled and guaranteed in good working order.

Write for particulars and get my special prices.

All makes of Blowers bought, sold and exchanged.

A. ASHER, 2d Floor, 109 Liberty St., NEW YORK.

Second-Hand Machinery

—FOR—

Immediate Delivery.

- 2 18 x 42 Allis Corliss Engines, Girder frame perfect order.
- 4 60 in. x 16 in. Standard Tubular Boilers, perfect order.
- 1 60 in. x 14 in. Standard Tubular Boilers, perfect order.
- 6 Duplex-Pumps, perfect order.
- 1 Clayton Duplex Air Compressor, 5 x 5 x 6 in.

WISCONSIN MACHINERY CO.,
125-127 West Water St., Milwaukee, Wis.

VALUABLE MANUFACTURING PLANT FOR SALE

And Long Established Business.

Brick factories with engine of 250 horse-power and ample boilers, shafting, lathes, fine new drop forges and tools, well adapted to general manufacturing.

All in perfect order and in active operation. Exceptionally well located on ground 250 feet square or more in a large city near New York. Room for more buildings. Front on Penn. R.R., where connection by siding can be made. Also facilities for receiving and shipping heavy goods by water without cartage. Abundant skilled labor on hand. Will be sold at a bargain. Communicate with MFGRS., P. O. Box 1945, New York.

Manufacturing Site for Sale at Bellaire, Ohio.

Two three-story brick heavy buttressed factory buildings, one 50 x 120, the other 35 x 120 feet in size, with a contiguous plot of land, 120 x 175, for enlargements.

Locality has abundance of natural gas and besides is in the midst of extensive coal fields.

Shipping facilities are the Baltimore & Ohio, the Pennsylvania, the Cleveland, Lorain & Wheeling, connecting with the N. Y. Central, the Ohio River Railroad, the Wheeling and Lake Erie, the Bellaire, Zanesville & Cincinnati, and the Ohio River itself. Bellaire has a population of 10,000, has water works, electric lights, trolley lines, natural and artificial gas, paved streets, good schools and churches. If desired, the owners will interest themselves in any promising industry proposing to occupy this site.

Address A. P. TALLMAN,
First National Bank, Bellaire, Ohio.

PIG IRON AT \$8.00 A TON.

I control and offer for sale a tract of land containing within its boundaries all necessary for the manufacture of Pig Iron except the coke, including ample water supply and furnace site. The ores are of different qualities, in never ending supply and cheaply mined. The stone is in inexhaustible quantity, of good quality and can be put at furnace site at nominal cost. Furnace site is alongside Railroad. Coke can be had at 10-12 per cent. selling price No. 2 foundry iron, Philadelphia. I am prepared to prove that iron can be made there at cost inside \$8.00 per ton. Freight to New York will not exceed \$2.75 per ton, and to tide-water considerably less. Property contains some 7,000 acres and has open on it seven different banks of ore of varying qualities. This is a most unusual opportunity to obtain a magnificent location for the manufacture of foundry or basic pig iron. For further particulars address

"PIG IRON,"
care The Iron Age, New York.

FOR SALE.

Henry Martin Brick M'ch'e and Pug Mill, cap. 25,000 daily at \$300.
Two (2) 75 H.P. Hor. Tubular Boilers, at \$200 each.
One Howe 20 ton Track Scale at \$80.

SCHULTZ & CO.,
14 South Broad St., Philadelphia.

FOR SALE.

Four trains of Plate Rolls.
One 9 ft. Fly Wheel, new 7 in. bore; weight, 6,000 lbs.
One Rod Straightening Machine, built by the Medart Patent Pulley Co., for straightening Rods up to 3 in. diameter and 25 ft. long.
A lot of extra cold and hot plate rolls, new.

HENRY A. HITNER'S SONS,
Gaul and Sergeant Streets, PHILADELPHIA

CHANCE TO MAKE MONEY.

Live man can buy at bargain largest Plumbing, Steam Heating, Gas Fitting, Stove and General Hardware Business, in South Jersey; established 35 years. Sales and contracts over \$30,000 annually. Sewerage system now under construction. Business must be sold to close estate. Books open to investigation. Address

JOHN S. DOWN, Administrator,
Box 55, Vineland, N. J.

Wire Nail Machines Wanted.

Set of Nail Machines for from 2 to 60d. Wire Nails. State make, whether new or how long in use. Address offers to

"NAIL MACHINES,"

Care The Iron Age, 1205 Chemical Bldg., St. Louis, Mo.

FOR SALE.

Improved water power in the city of St. Catharines, Ontario, Canada, representing about 200 horse-power, 50 horse-power water wheel in position, and room for more in the penstock. St. Catharines has good railway facilities and is a large manufacturing center. A live concern employing a considerable number of hands would receive substantial encouragement from the Municipality. Apply to

WILLIAM CHAPLIN,
St. Catharines, Ont.

SPECIALTIES MANUFACTURED.

A company in Chicago with fine factory and selling facilities desires to manufacture small iron specialties on royalty or otherwise. Address

BOX No. 20,

care The Iron Age, Fisher Building, Chicago, Ills.

REBUILT MOTIVE POWER. LARGEST DEALERS ON EARTH.

Our Machinery Hall is 200 by 360 feet.

All machinery leaves our hands guaranteed in perfect condition to perform the duty for which it is intended.

We Offer the Following Subject to Prior Sale.

ENGINES.

7. 10 H. P. Payne aut. upright.
15. 10x10 Westinghouse Junior, engine No. 1361.
19. 7x10 Atlas side crank.
28. 29x15x9 Westinghouse compound.
29. 1 10x18x10 Westinghouse comp'd.
30. 1 12x20x12 Westinghouse comp'd.
31. 1 13x22x13 Westinghouse comp'd.
32. 1 14x24x14 Westinghouse comp'd.
36. 1 7x14x18 Sioux City tandem compound.
37. 1 7x6 upright.
53. 1 7x7 Racine Hdw. Co. upright.
54. 1 50 H. P. Westinghouse Junior.
55. 1 75 H. P. Westinghouse Senior.
65. 1 11x14 Russell high speed automatic.
40. 1 J. I. Case, 10x16.
342. 1 15x32 horizontal box bed.
352. 1 9x14 horizontal box bed, center crank.
355. 1 12x16 horizontal box bed, side crank.
357. 1 10x14 side crank.
359. 1 16x36 patent gear valve motion, rated 150 H. P.
376. 1 15 H. P. Westinghouse Junior.
380. 1 11x18 side crank, Sinkler, Davis & Co.
382. 1 4x10 side crank.
419. 1 8x10 automatic Atlas.
438. 1 11x16x16 McEwen tandem compound.
440. 9x16 Rice automatic.
441. 16x36 Corliss.
443. 50 H. P. Raymond gas or gasoline.
445. 10x22 side crank.
476. 10x24 side crank, Greenwall.
479. 10x26 side crank.
480. 5x12 side crank.
482. 150 H. P. Poppet valve motion.
485. 10x22 side crank.
486. 1 1 1/2 x14 center crank.
487. 10-9x12, manufactured by Geo. W. Tiff & Sons, Buffalo, N. Y.; horizontal box bed, center crank, reversible valve motion and geared with the latest appliances.
501. 12x16 side crank, F. C. Wells.
502. 2 8x16 side crank, left hand.
503. 16x24 side crank.
504. 6x8 side crank.
505. 6x12 side crank.
506. 7x12 Rice automatic.
518. 23x36 Wright automatic.
519. 10x9 Westinghouse.
526. 8x12 Lansing automatic.
544. 13x18 Russell automatic.
548. 1 5x5 reversible motion, marine type.
569. 12x24 side crank.
562. 8 H. P. Otto gas.
564. 9x12 center crank.
606. 8 1/2 x14x12 McEwen tandem compound.
584. 4x5 center crank.
583. 5x6 upright center crank.
570. 8x12 center crank, Erie.
571. 5x8 center crank.
589. 16x22 side crank.
609. 6x8 side crank.
610. 5x8 upright side crank.
615. 3 H. P. gasoline.
123. 7x7 side crank.
196. 6x10 Westinghouse Junior.
197. 2 1/2 x5 1/2 side crank.
199. 8x16 Russell Gibbs.
200. 9x14 side crank.

201. 8 H. P. gasoline.
204. 8x14 center crank.
206. 18x28 Nicol, Burr & Co.
207. 6x10 side crank.
214. 7x10 side crank.
215. 12x20 side crank.
217. 10x14 center crank.
273. 12x12 automatic, Ideal.
274. 12x12 side crank, Phoenix.
275. 10x14 automatic, Wright & Adams.
296. 6x8 side crank, Ottumwa.
306. 6x12 upright side crank.
309. 10x18 side crank.
316. 13 H. P. Dayton.
318. 1 1/2 H. P. upright gasoline.
325. 12x18 side crank.
326. 8x12 double-cylinder hoisting, Webster, Camp & Lane.

BOILERS.

Our stock of boilers includes horizontal tubular, vertical, fire box, etc. We can supply you with anything you may need from 1 to 1000 H. P. We still have a few of the 60x16, 60x18 and 54x16 horizontal tubular boilers that we purchased from Armour & Co. Let us know your wants.

STEAM PUMPS.

We have in stock all kinds of steam pumps, and will be glad to furnish you our complete list on application.

COMBINED OUTFITS.

6. 1 10 H. P. portable engine and boiler on skids.
33. 1 portable engine and boiler; boiler 27"x8'9"; engine, 7x12.
556. 32"x20" boiler, with 3 1/2 x4" upright center-crank engine.
590. 36" high by 18" diam. boiler, with 3x4 center-crank engine combined.
563. 24" diam. by 5' fire box boiler, with 5x7 engine attached to side.
552. 1 portable 13'x38" fire box boiler, with 10x18 side crank engine bolted to left hand side of the boiler.
523. 1 6' high by 36" fire box boiler, with 7x8 side crank engine bolted to side.
507. 1 6' high by 36" fire box boiler, with 6x8 center-crank engine, manufactured by S. Oppenheimer.
442. 1 24x48 boiler, with 4 1/2 x5 side crank engine; each on separate base.
208. 1 12'x3' diam. portable fire box boiler and 6x12 engine combined on skids.
209. 1 8x3'x6" portable fire box boiler, with 7x12 engine combined, with hoisting drum and two winches attached.
216. 1 72x36" boiler, with 7x10 engine, single drum, single hoisting.

TANKS.

We always have from 50 to 100 steel and iron tanks.

ELECTRICAL MACHINERY.

800. 1 1200-light Slattery alternating-current generator.
801. 1 12-light Ball arc dynamo.
802. 1 20-light Ball arc dynamo.
803. 1 500-light Westinghouse alternating generator.

804. 1 750-light Westinghouse alternating generator.
805. 1 80 K. W. U. S. Westinghouse generator.
806. 3 Edison 300-light dynamos.
807. 1 Edison latest-type 110-volt 350-light dynamo.
808. 1 400-light Thomson-Houston compound-wound dynamo.
809. 1 500-light Thomson-Houston compound-wound dynamo.
810. 1 45-light Schuyler arc dynamo.
811. 1 30-light Schuyler arc dynamo.
812. 1 3-circuit arc switchboard, complete.

This is but a partial list. We have all kinds of small outfits; also handle electrical apparatus of all kinds. Our catalogue tells you more about it.

LATHES.

Ask for our complete stock-list of lathes and planers.

FANS, BLOWERS, ETC.

Over 200 different items on hand in the above. State your wants.

EMERY GRINDERS.

We have in stock and can make to order any size wanted.

MISCELLANEOUS.

9. 1 vertical steam heater, 3 1/2 x18".
10. 1 vertical steam heater, 4'x22".
11. 1 Excelsior steam heater, 7'x18".
12. 1 New York steam heater, 5 1/2 x16".
15. 1 4" Gardner governor.
16. 1 Weston differential chain tackle, one ton capacity.
21. 1 50 H. P. Barragwanath heater with base.
22. 1 bench polishing machine; height of bench to center of spindle, 9 inches.
24. 1 grinding machine, No. 2, with two speed pulleys, designed to run two wheels up to 18 inches diameter.
32. 1 Excelsior 500 H. P. feed-water heater.
50. 1 spur gear, 12' diam., 16 1/2" face, 5 1/2" pitch.
51. 1 5" Judson governor.
592. 1 derrick-hoisting crab, triangular form, 4x3'.
608. 1 Wainwright improved corrugated tube feed-water heater, 48" long, 24" diameter.
118. 1 12x16 air compressor.
195. 1 4 1/2 x6 Clayton air compressor.
202. 1 elevator double-hoisting engine and drum, cylinder 8x10.
329. 1 hoisting rig, consisting of two engines, two hoisting drums to attach on boiler; all complete on one frame.
347. 1 swinging crane, 9 tons capacity.
346. 1 cold steel saw, 48" diameter.
348. 1 set of hot rolls for angle iron.
463. 1 16" Tuerks water motor.
464. 3 8" Tuerks water motors.
465. 1 4 H. P. bunching street sweeper and revolving broom.

SUPPLIES.

We are the largest dealers in the country in belting, shafting, hangers, pulleys, hardware, rope, pipe and iron roofing. Our prices will interest you.

OUR CATALOGUE No. 78 IS THE BOOK YOU NEED.

We are constantly buying complete stocks of hardware at Sheriffs' and Receivers' Sales. We are headquarters for shelf and heavy hardware.

CHICAGO HOUSE WRECKING CO., W. 35th and Iron Sts., CHICAGO.

MACHINERY SALE.

ARIEL CYCLE CO.

MACHINERY IN FINE CONDITION.

Send for full description to

Marshall & Huschart Machinery Co.,
Nos. 62-64 S. Canal St., Chicago.
Johnson Bldg., Cincinnati, Ohio.
No. 119 Bank St., Cleveland, Ohio.

LATHES.

- 1—No. 3 American Watch Co. lathe and attachments.
- 1—14 in. by 6 ft. Reed lathe, with taper attachment and chucks.
- 1—15 in. by 6 ft. Plaisdell lathe and chuck.
- 1—15 in. by 6 ft. Prentice lathe and chucks.
- 1—16 in. by 6 ft. Prentice lathe and chuck.
- 1—18 in. by 5 ft. Reed stud lathe.

AUTOMATIC SCREW MACHINES.

- 1—1½ in. Cleveland automatic and tools.
- 1—2 in. Cleveland automatic and tools.
- 1—22 in. x 7½ American Tool Works screw machine and tools.
- 1—13 in. American Tool Works screw machine and tools.

DRILLS.

- Barnes friction drill and chuck.
- 24 in. Barnes B. G. P. F. drill and chuck.
- 24-in. National drill, back geared, power feed and chuck

SHAPERS.

- 1—16-in. Gould & Eberhart crank shaper.
- 1—15-in. Hendey friction shaper.

MILLING MACHINES.

- 1—Large Garvin Lincoln miller and attachments.
- 2—Garvin plain milling machines, with dividing heads.
- 1—No. 1 Brown & Sharpe universal milling machine.

SECOND-HAND

LATHES.

- 1—60-in. Henley pulley lathe.
- 1—42-in. Henley pulley lathe.
- 1—30-in. Double end facing lathe, for architectural iron work.
- 1—30 in. by 12 ft. Putnam, compound rest.
- 1—30 in. by 14 ft. Fitchburg.
- 1—30 in. by 16 ft. Sellers, compound rest.
- 1—51 in. by 22 ft. New Haven.
- 1—30 in. by 12 ft. Putnam, compound rest.
- 1—26 in. by 16 ft. Fitchburg, compound rest.
- 1—24 in. by 12 ft. Putnam, compound rest.
- 1—18 in. by 8 ft. Fitchburg, compound rest.
- 5—15 in. by 6 ft. Blaisdell and chucks.
- 3—13 in. by 5 ft. Blaisdell and chucks, hollow spindle.
- 1—14 in. by 6 ft. Reed, with taper attachment.

MILLING MACHINES.

- 2—No. 1 Brown & Sharpe Universal.
- 2—Garvin millers, with index centers.
- 1—No. 1 Cincinnati, with index centers.
- 1—Garvin heavy pattern Lincoln milling machine.

UPRIGHT DRILLS.

- 3—Barnes sensitive drills, wheel and lever.
- 2—20-in. Barnes drills, wheel and lever.
- 1—24-in. Barnes drill, back gears, power feed.
- 1—32-in. Aurora drill, back gears, power feed.
- 1—10-ft. radial drill.

GRINDERS AND POLISHERS.

- 1—Bench boring lathe and countershaft.
- 5—No. 3 Diamond grinders and countershafts.
- 1—Diamond cone grinder and attachments.
- 1—Polishing lathe, slide rest and attachments.
- 1—No. 6½ Diamond water grinder.
- 1—Small cup and cone grinder.
- 7—No. 2 Northampton buffers.
- 2—No. 3 Diamond buffers.
- 1—Garvin die grinder.

PUNCHING PRESSES.

- 1—Bliss double column heavy gear press.
- 1—P. 1 Upright press.
- 1—No. 3 Rudolphi & Krummel press.

VICES.

- 50—Assorted Parker vises, 4-in., plain and swivel.
- 20—Assorted bicycle vises.

MISCELLANEOUS.

- 1—Spoke header.
- 1—Stow flexible shaft.
- 1—Fox tube cutter.
- 1—2-in. cutting off machine, power feed.
- 1—Oil pump, 8 x 12.
- 1—Springfield oil separator.
- 1—24-in. fan.
- Belting, tool, &c.

MACHINERY.

PLANERS.

- 16 x 16 in. by 4 ft. Hendey.
- 21 x 21 in. by 4 ft. Hendey.
- 22 x 22 in. by 5 ft. Sellers.
- 24 x 24 in. by 6 ft. Betts.
- 30 x 30 in. by 8 ft. Pond.
- 33 x 33 in. by 10 ft. Cincinnati, two heads.
- 36 x 36 in. by 12 ft. New Haven.
- 42 x 42 in. by 14 ft. Gray.

SHAPERS.

- 15-in. Hendey.
- 16-in. Juengst.
- 20-in. Hendey.
- 24-in. Smith & Mills.
- 24-in. Hendey, heavy pattern, power down feed.
- Traveling head shaper, with two tables.

PRESSES.

- P 1 Ferracute.
- P 5 Ferracute.
- No. 3 Rudolphi & Krummel.
- Long & Allstatter, geared, 20-in. throat.
- Heavy geared press, 15,000 pounds.
- 2—Foot presses.
- 1—Ferracute long stroke screw press.
- 1—Toledo geared press, with feed rolls.

The majority of the above machinery is in fine condition. We can send cuts and photographs on application.

MARSHALL & HUSCHART MACHINERY COMPANY,

62-64 So. Canal Street, CHICAGO, ILL.

119 Bank Street, CLEVELAND, OHIO.

510 Johnston Building, CINCINNATI, OHIO.

CLOSING OUT SALE.

RETIRING FROM BUSINESS.

Machinery will be sold at low figures for quick sale.

J. B. DOAN & CO., 62-64 S. Canal St.

- 2-12 in. by 5 ft. American lathes, with compound rest.
- 1-12 in. by 6 ft. American lathe, with compound rest.
- 1-14 in. by 6 ft. American lathe, with compound rest.
- 1-14 in. by 6 ft. American lathe, with compound rest and taper.
- 1-14 in. by 8 ft. American lathe, with compound rest.
- 1-16 in. by 6 ft. American lathe, with compound rest.
- 1-18 in. by 6 ft. American lathe, with compound rest.
- 1-18 in. by 8 ft. American lathe, with compound rest.
- 1-15-in. American crank shaper.
- 1-17-in. American crank shaper.
- 1-21-in. American crank shaper.
- 1-22½-in. American B. G. P. F. National drill.

MISCELLANEOUS NEW MACHINERY.

- 1-No. 2 Owen universal miller, with power cross feed.
- 1-11-in. friction drill.
- 1-13-in. Barr sensitive drill.
- 1-20-in. Kelly crank shaper.
- 1-20-in. Dennis W. & L. drill.
- 1-20-in. Schrock drill, W. & L.
- 1-12 in. by 4 ft. Stockbridge speed lathe.
- 1-10 in. by 4 ft. 6 in. Davis screw cutting lathe, with plain rest.
- 1-12 in. by 5 ft. Davis screw cutting lathe, with plain rest.
- 1-18 in. by 8 ft. Davis screw cutting lathe, with compound rest.
- 1-26 in. by 12 ft. Davis screw cutting lathe, with compound rest.
- 5-No. 1 Davis key-seaters.
- 2-No. 2 Davis key-seaters.
- 1-3-in. Davis cutting off machine.
- 1-Yankee twist drill grinder.
- 1-No. 4 Young grinder on column and countershaft.
- 1-No. 3 Egan arbor press.
- 1-No. 5 Aurora punch.
- 1-No. 5 Aurora shear.
- 1-Bowser oil tank and pump.
- 1-½-in. geometric die head.
- 1-No. 1 Union tapping head.
- 1-¾-in. Barrington tapping head.
- 7-Universal drill press vises.

- 8-13-in. planer chucks.
- 6-18-in. planer chucks.
- 1-No. 30 Massey clincher vise.
- 1-No. 31 Massey clincher vise.
- 1-No. 32 Massey clincher vise.
- 1-No. 33 Massey clincher vise.
- 1-5-in. 3-jaw Union scroll chuck, No. 36.
- 1-6-in. 3-jaw Union scroll chuck, No. 36.
- 1-7½-in. 3-jaw Union scroll chuck, No. 36.
- 1-9-in. 3-jaw Union scroll chuck, No. 36.
- 1-6-in. 4-jaw Ind. National chuck.
- 1-9-in. 2-jaw Union box chuck, No. 26.
- 1-12-in. 3-jaw Universal Union chuck, No. 42.

SECOND-HAND MACHINERY.

- 1-15 in. by 6 ft. screw cutting lathe.
- 2-16 in. by 6 ft. Lowell screw cutting lathes.
- 1-18 in. by 6 ft. Fuller & Wilson screw cutting lathe.
- 1-25 in. by 12 ft. New Haven screw cutting lathe.
- 1-40-in. facing and milling lathe.
- 1-42-in. Henley pulley boring and turning lathe.
- 1-48-in. Fay & Scott gap boring lathe.
- 1-8-in. Stover bench drill.
- 1-12-in. Young bench drill.
- 1-20-in. upright drill, with wheel feed.
- 1-17 x 17 x 45 in. Hendey planer.
- 1-15-in. stroke Hendey friction shaper.
- 1-1½-in. Bardons & Oliver F. H. screw machine with P. F.
- 1-4-in. double spindle Whiton centering machine.
- 1-30 H. P. 500 volt Com'l Electric Co. motor.
- 1-1¾-in. Windsor F. H. screw machine with P. F.
- 1-Challenge grinder on column, with countershaft.
- 1-No. 2 Young grinder head and countershaft.
- 1-No. 2 Young grinder head.
- 1-Diamond lapping machine.
- 1-20-in. shaper vise.
- 1-Kempsmith 10-in. index head.
- 1-Automatic turret head for 15-in. lathe.
- 1-Planer chuck.
- 1-Planer chuck.
- 1-24-in. 4-jaw Independent union chuck.
- 1-32-in. Aurora drill press.
- 1-Jarecki pipe machine.

Machinery can be seen at the above address until February 1st.

On January 10 we will open our new warerooms at 119 Bank Street, Cleveland, Ohio. A complete stock of machinery manufactured by the following firms will be on sale:

CINCINNATI MILLING MACHINE COMPANY,
CINCINNATI MACHINE TOOL COMPANY,
CINCINNATI PLANER COMPANY,
BICKFORD DRILL AND TOOL COMPANY,
LODGE & SHIPLEY MACHINE TOOL COMPANY,
BULLARD MACHINE TOOL COMPANY,
GOULD & EBERHARDT,
WHITNEY MFG. COMPANY,
FERRACUTE MACHINE COMPANY

and many others. Our new catalogue of Machine Tools is ready for distribution. Send for same.

MARSHALL & HUSCHART MACHINERY COMPANY,

62-64 So. Canal Street, CHICAGO, ILL.

119 Bank Street, CLEVELAND, OHIO.

510 Johnston Building, CINCINNATI, OHIO.

New and Second-Hand Machinery

In Stock for Immediate Delivery.

ENGINE LATHES.

- 1-78 in. by 18 ft. Triple Geared.
 - 1-36 in. by 18 ft. Walcott.
 - 1-36 in. by 16 ft. Bradford.
 - 1-33 in. by 16 ft. Walcott.
 - 1-31 in. by 14 ft. Bradford.
 - 1-30 in. by 14 ft. W. P. Davis.
 - 1-26 x 44 in. by 16 ft. McCabe.
 - 1-25 in. by 12 ft. Hamilton.
 - 1-25 in. by 22 ft. Wright.
 - 1-24 in. by 12 ft. Springfield.
 - 1-26 in. by 16 ft. Wright.
 - 1-26 in. by 14 ft. Shepard.
 - 1-24 in. by 10 ft. Dietz-Gang.
 - 1-24 in. by 10 ft. D. S. & B. with heavy turret on Shears.
 - 1-24 in. by 10 ft. New Haven.
 - 1-22 in. by 12 ft. Hamilton.
 - 1-20 in. by 12 ft. Union Mach. Co.
 - 19 and 20 in. Silk-Anderson, 10, 12 and 14 ft. beds.
 - 1-20 in. by 10 ft. Putnam.
 - 75-18, 16 and 14 in. Lathes, 8, 6 and 5 ft. beds, of Flather, Reed, Le Blond, Lodge & Davis and other makes.
 - 20-13, 12, 10 and 9 in. Lathes, various makes, also Foot Power Lathes.
- Full line of Springfield, Walcott, Hamilton and Bradford Lathes, from 14 to 42 in. swing.

SPEED LATHES.

- 1-26 in. by 8 ft. N. Y. S. E. Co.
- 1-24 in. by 6 ft. Fitchburg.
- 1-12 in. by 8 ft. Fitchburg.
- 2-13 in. by 5 ft. Diamond M. Co.
- 4-10 in. by 4 and 3 ft. Diamond M. Co.
- 6-11 in. by 4 ft. Wells Bros.

PLANERS.

- 1-48 x 36 in. by 8 ft. Wood Light, one head.
- 1-44 x 44 in. by 12 ft. Niles, one head.
- 1-36 x 36 in. by 12 ft. New Haven, one head.
- 1-36 x 36 by 10 ft. Whitcomb, one head.
- 1-32 x 32 in. by 10 ft. Lodge & Davis, one head.
- 1-32 x 32 in. by 8 ft. Pond, one head.
- 1-30 x 30 in. by 8 ft. Whitcomb, one head.
- 1-32 x 25 in. by 8 ft. New Haven, one head.
- 1-27 x 27 in. by 5 ft. New Haven, one head.
- 1-26 x 26 in. by 6 ft. Wheeler, one head.
- 1-26 x 26 in. by 8 ft. Whitcomb, one head.
- 1-22 x 18 in. by 5 ft. Rochester, one head.
- 1-20 x 20 in. by 4½ ft. Sellers, one head.
- 1-16 x 15 in. by 4 ft. Hendey, one head.
- 1-18 x 15 x 40 in. Putnam, one head.
- 1-15 x 12 x 15 in. N. Y. S. E. Co. Crank Planer.
- 1-15 x 15 in. by 3 ft. Pratt & Whitney Planer.
- 1-9 x 6 x 24 in. Federal Bench Planer.
- 1-9½ x 8½ x 21 in. Bench Planer.

SHAPERS.

- 1-30-in. Walcott Geared.
- 1-26-in. Walcott Geared.
- 1-22-in. Walcott Geared.

- 1-16-in. Juengst Geared Friction.
- 1-20-in. Steptoe Crank.
- 2-20-in. Springfield Crank.
- 1-18-in. Walcott Crank.
- 1-16-in. Steptoe Crank.
- 1-16-in. Gould Crank.
- 4-15-in. Springfield Crank.
- 1-14-in. Walcott Crank.
- 2-12-in. Springfield Crank.
- 1-12-in. Gould & Eberhardt Crank.
- 2-6-in. Boynton & Plummer Crank.

TURRET LATHES.

- 1-No. 7 Pearson P. F. to turret slide.
- 1-No. 6 Pearson P. F. to turret slide.
- 3-No. 5 Pearson 2 1-16-in. hole in spindle
- 1-No. 4 Pearson 1½-in. hole in spindle.
- 3-No. 3 Pearson 1 9-16 in. hole in spindle
- 2-No. 2 Pearson 1 5-16-in. hole in spindle
- 2-No. 1 Pearson 1 1-16 in. hole in spindle
- 1-28 in. by 8 ft. Pratt & Whitney.
- 1-18 in. by 8 ft. Pratt & Whitney.
- 1-18 in. by 6 ft. Lodge & Davis.
- 1-18 in. by 6 ft. Fay & Scott.
- 1-16 in. by 6 ft. Warner & Swasey.
- 1-15 in. by 5 ft. Lodge & Shipley.
- 1-14 in. by 5 ft. Warner & Swasey.
- 1-15 in. by 5 ft. Hendey.
- 1-No. 2 Warner & Swasey.
- 1-15-in. Pratt & Whitney double B. G.

SCREW MACHINES.

- 1-No. 5½ Bardons & Oliver.
- 1-No. 6 Pearson 2½-in. W. F. capacity.
- 1-No. 5 Pearson 2 1-16-in. W. F. capacity (Stock of Nos. 4, 3, 2 and 1 on hand.)
- 4-No. 3 Pratt & Whitney.
- 3-No. 4 Bardons & Oliver.
- 1-No. 4 Windsor.
- 1-No. 3 Warner & Swasey.
- 3-No. 2½ Pratt & Whitney.
- 1-No. 3 Kemp Smith.
- 1-No. 2 Costillo.
- 2-2-in. Cleveland Automatic.
- 1-No. 3 B. & S. Semi-Aut.

MILLING MACHINES.

- Kemp Smith Nos. 5, 9, 8, 0, 3½, 2½, 3, 2, 1½, 10, 12, Plain and Universal.
- 1-No. 1 Lodge & Davis B. G. and arm.
- 1-No. 3 Kemp Smith, old style.
- 2-No. 3 Garvin, Plain.
- 4-No. 2 Cincinnati Plain B. G. and arm.
- 1-No. 3 Brainerd, B. G.
- 1-No. 3 P. & W. Lincoln Pattern.
- 2-No. 2 P. & W. Lincoln Pattern

DRILL PRESSES.

- Hamilton Radials 76 and 110 in.
- Hamilton Upright Drill Presses from 12 to 44 in., all styles.
- 2-84-in. Fosdick & Holloway Radial.
- 1-40-in. Sellers B. G. & P. F.
- 1-24-in. Bement Double Column.
- 3-25-in. Barnes B. G. & P. F.
- 2-24-in. Sibley & Ware, B. G., P. F. & Aut. Stop.
- 4-20-in. Barnes W. & L. & Aut. Feed.
- 2-22½-in. Davis & Egan W. & L. & Aut. Feed.
- 2-20-in. Barnes W. & L.
- 1-20-in. Bickford.
- 1-12-in. Slate Sensitive.
- 1-Acme Sensitive.

- 1-13-in. Burnham Sensitive.
- 2-4 Spindle Pratt & Whitney Co.
- 2-3 Spindle Barnes.
- Full line Burnham and Barr Sensitive Drills.

MISCELLANEOUS.

- 1-42 in. by 8 ft. Ingersoll Slab Milling Machine.
- 1-60-in. Stevens Pulley Lathe.
- 1-26-in. Stevens Pulley Lathe.
- 1-No. 4 Landis Universal Grinder.
- 1-No. 1 Brown & Sharpe Universal Grinder.
- 1-No. 5 Hercules Bulldozer.
- 1-No. 4 Williams & White Bulldozer.
- 2-66-in. Squaring Shears, Geared ¼-in. capacity.
- 1-No. 3 Knight Power Punch and Shear, 18-in. throat, capacity about 3¼ in. in ½ in.
- 1-36-in. Gould & Eberhardt full automatic Gear Cutter for spur and bevels.
- 1-36-in. Gould Gear Cutter, spur gears only.
- 1-18-in. G. E. Aut. Gear Cutter, spur and bevels.
- 1-80-in. Bradley Helve Hammer.
- 1-25-in. Bradley Helve Hammer
- 1-2 Spindle Whitton Centering Machine.
- 1-54-in. Boring and Turning Mill.
- 1-¾-in. W. & W. Riveting Machine.
- 1-P. & W. Hand Wheel Turning Machine.
- 1-No. 4 Gorton Disc Grinder.
- 1-Warner & Swasey Valve Miller, two-spindle.
- 1-Ea. No. 8, No. 7, No. 5 and No. 4 Sturtevant Blowers.
- Lot Emery Grinders, various sizes.
- 1-2-in. Bignall & Keeler Pipe Threading Machine.
- 1-125-lb. Beaudry Power Hammer.
- 1-1½-in. Acme Bolt Cutter.
- 1-No. 2½ Becker Vertical Miller.
- 1-2-in. Lewis Bolt Header.
- 1-13-in. Bement Slotting Machine.
- 1-No. 7 Williams & White Drop Hammer.
- 1-24-in. Morton Key Seating Machine.
- 1-48-in. 150-ton, Niles Car Wheel Press.
- 2-Dallert Portable Drills.
- 1-Higley Cold Saw; capacity 8¼-in. rounds.
- 1-Jenks Horizontal Tapping and Threading Machine.

POWER PRESSES.

- 1-No. P 5 Ferracute.
- 1-No. P 3 Ferracute Geared.
- 1-No. 4 Rudolphi & Krummel inclinable
- 1-No. 3 Frech, open back.
- 1-No. 42 Crosby open back.
- 1-No. 42 Rudolphi & Krummel, Adj. Apron.
- 1-No. 19 Weber Safety Inclinable.
- 1-No. 4 Cady Pillar Press.
- 1-Remington Straight Sided, heavy.
- 1-No. 30 Waterbury, open back.
- 1-Crosby Foot Press.
- 3-Mossberg & Granville Foot Presses, No. 1A.
- Full line Rudolphi & Krummel's New Presses.

We are in the market to buy or trade in, any kind of good iron or brass working machinery. Let us know your requirements.

McDOWELL, STOCKER & CO.,
59-61 South Canal Street, CHICAGO, ILL.

FACTORY PROPERTY FOR SALE

At Batavia, Illinois.

On tracks of C. & N.-W. Ry., with over 750 feet frontage, nearly 3 acres of ground; 4 stone buildings, connected, floor space of 38,463 square feet. Steam Power Plant, including 2 boilers, 80 horse power, with other machinery; one 125 horse power Steam Engine.

ALSO 100 H. P. WATER POWER.

This excellent property can be purchased at an exceptionally low price. For further particulars, address

WILLIAM A. BOND & CO., Agts.,
115 Dearborn St., Chicago.

FOR SALE.

One 19 x 96 Slide Valve Engine, first-class working condition, shaft 8 1/4 in. in diameter, 7 ft. 1 in. long; flywheel 19 ft. in diameter x 90 in. face; one ore crusher in good condition; one rotary squeezer; one 18 in. two high muck mill, complete; sixteen puddle buggies and ten water boshes.

PALMER STEEL & IRON CO.,
The Rookery, Chicago, Ill.

Specialty Wanted.

The manufacturer of a standard builders' hardware specialty, whose business is with wholesale hardware houses throughout the U. S., would like to handle on commission some other specialty. Might manufacture if article could be made with present facilities. Address

"E," care The Iron Age, 70 Kilby St., Boston, Mass.

BARGAINS

13 in. x 9 ft. Eng. Lathe, Stover.
14 in. x 6 ft. " " Fitch. M. W.
15 in. x 6 ft. " " Dexter.
18 in. x 8 ft. " " Eddy.
20 in. x 10 ft. " " Fifield.
24 in. x 14 ft. " " Fitch. M. W.
30 in. x 12 ft. " " Ohi M. W.
15 in. x 18 in. Crank Planer, Blaisdell
20 in. B. C. Drill, Stover.
20 in. B. C. & S. F. Drill, Stover.
23 " " Snyder.
24 in. " Drill, New Haven.
28 in. " Blaisdell.
4 ft. Radial. Cin. Radial Drill Co.
No. 3 Stiles Geared Press.
No. 1 Un. Grinder. Brown & Sharpe
16 in. Crank Shaper. Ohio M. T. Co.
Gang Drills, Speed Lathes, Grinders, Sensitive Drills, &c.

If you wish to buy or sell please let me know. Can give bargains in new and second-hand machines at all times. GEO. E. AFFLECK,
109 Liberty St., N. Y.

Brown & Sharpe, Epicycloidal GEAR CUTTING CUTTERS.

Selling Out to Reduce Stock.
Discount from list 75%.

HILL, CLARKE & CO.,
BOSTON, MASS.

WANTED TO PURCHASE.

A good second-hand planer, 72 in. long and from 27 to 42 in. between housing. Also a good second hand modern iron lathe to turn not less than 8 ft., with 30 in. swing, ECONOMY BOX AND PIE PLATE CO.,
Marion, Indiana.

FOR SALE.

Old established store in a central New York city, handling shelf hardware, stoves and tinware; with shop doing tin work, plumbing, gas and steam-fitting. Address "S. & H."
Care The Iron Age, New York.

FOR SALE.

Four story Hardware and General Department Store, with or without stock. Best stand. Rare chance. Must be sold to close up estate. Address
"ADMINISTRATORS,"
Box 10, Goodville, Lancaster Co., Pa.

Manufacturing Site Wanted.

By an old established manufacturing business, now running and employing 250 hands. Must be adjacent to a large city in the iron and coke regions; have good shipping facilities and have buildings suitable or convertible to the purpose. Change from present location necessary to get nearer to raw materials. Address

"KEYSTONE,"
care The Iron Age, New York.

WANTED, Machinery Salesman.

Salesman who calls on machinery dealers in the principal cities to sell punches, &c., as a side line, for responsible manufacturers; we are willing to pay a fair salary to the right party; please state territory covered and what other lines you sell. Address

"M. S. M.,
Care The Iron Age, New York.

WANTED.

To interest capital to the extent of 200 to 300 thousand dollars in the Wholesale Hardware Business, to co-operate with a well established and paying business. No agents. Best references given. Address in confidence,

"WHOLESALE HARDWARE"
care The Iron Age, New York.

FOR SALE.

GOOD BUSINESS PROPERTY and clean stock of Hardware and Housefurnishing Goods, Tinning and Plumbing for sale. Stock \$9000, real estate \$6300. Buildings rent per year for \$608. Doing a good business in live town. Electric lights and water system. Reasons for selling to dissolve partnership. Sell cheap if sold soon. Located in Saratoga Co., N. Y.

"BARGAIN," 1237,
care The Iron Age, New York.

FOR SALE.

\$10,000 stock of hardware. The best town in Southern Michigan. Address
"HARDWARE,"
care The Iron Age, 1205 Fisher Bldg., Chicago, Ill.

G

Rd. Johnson, Clapham & Morris,
Ltd.,
Manchester, England,

BRANCHES IN

Liverpool, England; Sydney and Melbourne, Australia.

Leading Iron Hardware
and Furniture
JOBBERs and IMPORTERS.

Solicit prices from Large Manufacturers in America who

desire to do an

EXPORT TRADE.

FOR SALE.

Combination Ice and Roller Skate Dies. Patent for Elevator Stop and Lock. Patent for Elevator Gate and Bar. Send for our list of patents.

P. O. BOX 2294, Boston, Mass.

FOR SALE, CHEAP.

2 275 H. P. Campbell-Lell Water Tube Boilers, 160 lbs. pressure. Brand new.

MAYO & ROHRER CO.,
220 Broadway, New York.

BRITISH MARKET.

SHELBY & CO., 66 Leonard St.,
LONDON, E. C.,

Are in shape to push Engineering and Hardware specialties on above market.

CORRESPONDENCE INVITED.

WANTED.

I will pay cash for Job Lots and Bankrupt Stocks of Hardware, Furniture, Bicycles and Sundries, in fact, all Bankrupt Stocks of any description. Address

FRANK F. BAEL, Trenton, N. J.

Manufacturers of Staples and Specialties in Hardware, Tools, House-Furnishing Goods and Kindred Lines, who desire Direct Representation in Great Britain and Continental Europe by Established Firm of Manufacturers' Selling Agents, should address "STAPLES," care The Iron Age, New York.

FOR SALE.

A profitable Hardware business, stock about \$14,000, consisting of Builders' Hardware, Stoves, Furnaces, Tinware, Paints, Oils and Glass, will be sold at a bargain if bought immediately, to close out a partnership. Address "G. M. S.," Box 1110, care The Iron Age, New York City.

Thomas A. Green,
92 and 94 Plymouth St., Brooklyn.
Scrap Iron, Steel & Metals

PURCHASED FOR CASH.

Correspondence Solicited.

OLD CHINA and glass, flint lock arms, muskets, old odd revolvers, swords, machetes, old knives, war, pioneer, historical and Indian relics, antiquities, and oddities. Price list free. DAVIS BROS., Box B Diamond, Portage Co., Ohio.

FOR IMMEDIATE SALE.

An old established Hardware and Stove Store, Embracing Tinware, Plumbing, etc. Stock, \$10,000. Can be reduced. Good growing trade. Address "DRAWER 55," Watkins, N. Y.

E. BISSELL & CO.,

WHOLESALE

HARDWARE AUCTIONEERS,

12 Murray St. and 15 Park Place, N. Y.

Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

Water Pipe FOR SALE.

About 15,000 feet 20 in. Cast Iron Water Pipe made by R. D. Wood & Co., 170 lbs to foot, in 12 ft. lengths, in first-class condition for re-use.

Will be sold in lots to suit.

FRANK SAMUEL,
Harrison Bldg., Philadelphia, Pa.

BERKSHIRE IRON YARD, M. H. ROGER S, Owner. Scrap Iron, Metals, Etc.

221-223-225 Housatonic Ave.,
BRIDGEPORT, CONN.

TELEPHONE.

SPOT CASH PAID FOR Scrap Iron and Steel

Give description, shipping point and lowest spot cash price.

F. GREINER, 406 Drexel Building,
PHILADELPHIA, PA.

Wagon Tires,

STEEL OR IRON,
RD. EDGE OR SQUARE.

Angles Up To Four Inch.

LOGAN IRON & STEEL CO.,
BURNHAM, PA.
Buyers of Scrap for Cash.

I buy Iron and Metal Scrap and wish to hear from anybody having cotton ties, pipe, hoops, cast borings, wrought and steel turnings, boilers, cast scrap, etc. Also wrecks from fire, etc.

ROBERT M. CUNLIFFE,
1140-42 Washington Ave., Phila., Pa.

TELEPHONES 2440, 2441 AND 2442 BROAD.
B. NICOLL & COMPANY,
59 AND 61 WALL STREET, NEW YORK.
WIRE RODS,
BILLETS.
IRON ORE AND MILL CINDER.
FOUNDRY, FORGE, BESSEMER and BASIC PIG IRON.
Steel and Iron Scrap for Open-Hearth Furnaces Bought and Sold.
Furnace Agents, Exporters and Importers.

FOR IMMEDIATE DELIVERY. Angles, Beams, Channels, Plates, Tees, Zees, Bars.

5000 tons in stock. Moderate prices. Send for stock sheet and quotations.

STRUCTURAL DEPARTMENT,
ILLINOIS STEEL CO.,

Designers, Manufacturers and Erectors of
Structural Iron Work, Dealers in Structural Materials.

50 Wabansia Ave., CHICAGO.

FOR SALE.

About

150 tons 56 lb. Steel Relaying Rails and Splices, in West Virginia.

500 tons 56 lb. Steel Relaying Rails and fastenings, Southern delivery.

4,000 to 4,500 tons Steel Relaying Rails and fastenings, Southern delivery.

ISAAC JOSEPH IRON CO.,

Swift Bldg., CINCINNATI, OHIO.
Monadnock Block, CHICAGO, ILL.

1000 TONS CHARCOAL IRON BROKEN SHELL.

Must Be Sold At Once.

M. SAMUEL & SONS,
Kent Ave. and North 2d St., Brooklyn.
Washington and Bethune Sts., New York.

BEAMS, CHANNELS, ANGLES, PLATES.

Eye Beams, from 4 ins. (7½ lbs.), to 20 ins. (65 lbs.)
Channels, from 4 ins. (5½ lbs.), to 15 ins. (33 lbs.)
Angles, from 1½ ins. x 1½ ins. x 3-16 in. to 6 ins. x 6 ins. x ½ in.
Angles, from 2½ ins. x 2 ins. x 3-16 in. to 6 ins. x 4 ins. x ½ in.
Zee Bars, 3 ins., 4 ins. and 5 ins.
Plates, 1½ ins. and over.

All material in 50-ft. lengths, or cut to specified lengths if desired. Send for detail stock list.
All material in stock, and will be shipped immediately on receipt of order.

Quotations subject to prior sale.

THE FOREST CITY STEEL & IRON CO.,
Cleveland, O.

WANTED. Scrap Iron and Steel.

Correspondence Solicited.

C. Botjer, 405 Newark St., Hoboken, N. J.

FOR SALE. Relaying Rails. Prompt Deliveries.

Standard and light sections, subject to inspection. Only prime relayers handled by this firm. Delivery Chicago, St. Paul, Kansas City, El Paso, Texas, Washington, D. C., and other points.

For further information write to
BLOCK-POLAK IRON CO.,
923-925 Marquette Bldg., Chicago.

WE BUY PLANTS, TO WRECK. WANT RELAYS and SCRAP RAILS. SCRAP BRASS, COPPER and METALS.

L. E. KENNEDY & CO.,
95 Liberty St., New York City.

FOR SALE.

4 or 5 tons of 4 in. Cast Pipe.

WEST SIDE FOUNDRY CO.,
Troy, N. Y.

Scrap Iron, Steel and Metals. New Jersey Iron & Metal Co., PATERSON, N. J.

Write us when you have Scrap to dispose of or want to buy.

Scrap Iron, Steel and Iron Rails

bought and sold by

M. J. & M. BLAKE,

10th Ave. and 15th Street,
New York City.

Telephone Call, 897 18th St.

JOHN LEONARD. MICHAEL BLAKE. JOHN LEONARD & CO. IRON AND STEEL SCRAP. IRON AND STEEL RAILS, PIG IRON, ETC., 220 Broadway.

ST. PAUL BUILDING, NEW YORK.
TELEPHONE, 975 CORTLANDT.
Correspondence Solicited.

The Morton B. Smith Co., 243 FRONT ST., NEW YORK. OLD METALS

of every description purchased for cash, also

SCRAP IRON and STEEL

in carload lots.

Correspondence solicited.

E. O. MILES, President. J. W. RUSSEY, Manager.

Scrap Iron and Old Metals. ATLANTA JUNK CO., 278 to 298 Marietta St., Atlanta, Ga.

CORRESPONDENCE SOLICITED FROM
BUYERS AND SELLERS.

Relaying Rails WANTED.

25 to 60 lbs. per yard, section.
Southern delivery.

MAY & SPALDING,
Dealers Railway Equipment,
Atlanta, Ga.

FOR SALE. Relaying Rails.

35 tons of 35 lb. steel, with splices.
800 tons of 50 lb. steel, with splices.
500 tons of 56 lb. steel, with splices.
Tidewater delivery.

THE STEEL RAIL SUPPLY CO.,
100 Broadway, New York City.

WANTED. SCRAP STEEL.

Give description and price delivered our yard, Pottstown, Pa.

Donaldson & Newton, 421 Chestnut St.,
Philadelphia, Pa.

SCRAP IRON or STEEL WANTED.

E. B. LEAF & CO.,
820 Real Estate Trust Bldg., Philadelphia, Pa.

WANTED.

I have a rolling-mill in which there is an 18-inch muck train and a 9-inch guide mill, all complete and in running order. I want a partner with capital. For full information address

B. MANFIELD,
Sandwich, Ill.



Advertising Hardware.

The value of illustrated advertising is become so generally recognized that expensive original designs are frequently employed to catch the eye and display goods.

Owing to the difficulty and expense to individual dealers of preparing cuts to adequately represent a hardware stock and kindred lines of goods, *The Iron Age* will, in response to the increasing demand, maintain a department for supplying electrotypes designed to assist in making up attractive and effective ads.

The cuts already prepared comprise a numerous line, from which the enterprising dealer can obtain assortments at comparatively little cost.

These cuts are such as can be used to the greatest advantage in local newspaper and circular advertising, and selections of them may advantageously be kept at hand, for use as occasion requires, by merchants who advertise.

The Iron Age Advertising Cuts.

ATTRACTIVE DESIGNS are presented in cuts numbers 1 to 83 for advertising a wide variety of articles, and including a few special designs of general utility. In size, these cuts are irregular, ranging from 4 to 13 square inches in surface measurement. The uses of cuts numbers 1 to 83, their prices, and the approximate spaces occupied, are stated in the following list:

No.	Price.	No.	Price.
1. Farmers' Tools, 5-in.	\$.50	41. Furnaces, 24-in.	.50
2. Apple Parers, 54-in.	.50	42. Furnaces or Registers, 12-in.	.75
3. Window Screens, 4-in.	.50	43. Special Design, 3-in.	.40
4. Ice Cream Freezers, 4-in.	.50	(For use with various captions, such as "Odd, isn't it, that we can sell such excellent goods for so little money?")	
5. Meat Choppers, 4-in.	.50	44. Radiators, 3-in.	.40
6. Ice Cream Freezers, 14-in.	.75	45. Ranges or Kitchen Utensils, 5-in.	.50
7. "HARDWARE," 34 ins. wide.	.40	46. Stoves, 44-in.	.50
(Designed with hardware articles.)		47. Tea Kettles, Tea and Coffee Pots, 3-in.	.50
8. Corner section of a Hardware Border, each	.40	48. Registers or Furnaces, 6-in.	.50
(Designed with articles of hardware; four of these form an inclosure for an ad. measuring 44 x 44 ins.)		49. Butchers' Tools, 14-in.	.75
9. A center piece designed to lengthen above border, 11-in.	.15	50. Guns, 44-in.	.50
10. A center piece designed to lengthen above border, 11-in.	.25	51. Special Design, 5-in.	.50
11. Parlor Lamps, 7-in.	.50	(Can be used with various headlines, such as "You do not know what you miss by not visiting our store," "Passing chances.")	
12. Fishing Tackle, 4-in.	.50	52. Pocket Knives, 4-in.	.50
13. Axes, 44-in.	.50	53. Bird Cages, 3-in.	.50
14. "HARDWARE," (A 2-in. title cut.)	.25	54. Fishing Tackle, 5-in.	.50
15. Kitchen Utensils, 44-in.	.50	(For use with various headlines, such as "A pleased customer," "Always on top.")	
16. Special Design, 2-in.	.35	55. Lanterns, 5-in.	.50
(For various captions, such as "We figure closely for your trade.")		56. Dog Chains, 54-in.	.50
17. Axes, 4-in.	.50	57. Dog Collars, 5-in.	.50
18. Skates and Sleds, 3-in.	.50	58. Sporting and Athletic Goods, 5-in.	.50
19. "Kitchen Necessities" (A four-sided border cut for ad. 44 x 64.)	1.00	59. Revolvers, 4-in.	.50
20. "Kitchen Necessities," 6-in.	.50	60. Horse Supplies, 7-in.	.50
21. Saws, 4-in.	.50	61. Furnaces, 4-in.	.50
22. Scissors, 5-in.	.50	62. Tools and Forges, 5-in.	.50
23. Cutlery and Silverware, 2-in.	.40	63. Christmas Goods, 44-in.	.50
24. Oil Heaters, 4-in.	.50	64. Christmas Goods, 4-in.	.50
25. Corn Harvesting Tools, 5-in.	.50	65. "Christmas Presents," 24-in.	.50
26. Guns and Revolvers, 34-in.	.40	66. "Cut Prices," 5-in.	.50
27. Lanterns and Lamp Supplies, 3-in.	.50	67. Bird Cages, 5-in.	.50
28. Special Design, 13-in.	.75	68. Special Design, 54-in.	.50
(For "Cut Prices," "Meat Cutters" or "Axes," &c.)		(For headlines such as "Take your pick.")	
29. Furnaces or Registers, 4-in.	.50	69. Special Design, 4-in.	.50
30. Furnaces, 5-in.	.50	(For various headlines, such as "We are adding," "We are prepared to figure on goods you want.")	
31. Irons, 44-in.	.50	70. Skates, 1-in.	.20
32. Tinware, 54-in.	.50	71. Pocket Cutlery, 34-in.	.50
33. Special Design, 34-in.	.50	72. Thermometers, 5-in.	.50
(For Stoves, Ranges and Furnaces.)		73. "Fall and Winter Goods," 10-in.	.75
34. Special Cut, 1-in.	.20	74. Special Design, 6-in.	.50
(For various headlines, such as "We draw custom by our magnetic prices.")		(For headlines such as "We can give you pointers on many goods.")	
35. Scythes, Rakes, Spades, Shovels, Hoes, Forks, &c., 6-in.	.50	75. Furnaces, 9-in.	.75
36. Special Design, 5-in.	.50	76. Sporting Goods, 64-in.	.50
(For use with various headlines, such as "Hot water heating," "You're the fellow we're after," "Chasing trade with steaming bargains.")		77. Cutlery, 64-in.	.50
37. Scythes, 44-in.	.50	78. Skylights, 2-in.	.25
38. Revolvers, 4-in.	.50	79. Fishing Tackle, 2-in.	.25
39. Registers or Furnaces, 5-in.	.50	(Cut of a fish 24 ins. wide.)	
40. Special Design, 44-in.	.50	80. Plumbing, 13-in.	.75
(For Ice Cream Freezers or other hot weather goods.)		81. Plumbing, 3-in. (Same as No. 80, reduced.)	.40
		82. Roofing, 10-in.	.75
		83. Roofing, 3-in. (Same as No. 82, reduced.)	.40

DISCOUNTS:—6 to 20 Cuts, 16 2-3 Per Cent.; 20 or more Cuts, 20 Per Cent.

The above series of cuts is supplemented by numbers 501 to 623, giving small, accurate illustrations of leading Hardware and House Furnishing Goods, Kitchen Utensils, etc., the sizes ranging from one-half inch to two square inches in surface. These occupy so little space that several can be used in an advertisement. The price is 20 Cents Each, or Six Cuts for \$1.00.

No. 505. Auger Bit.	No. 514. Grindstone (Family).	No. 558. Revolver.
506. Axe.	622. Heater (Air Tight).	568. Rule (Boxwood or Ivory).
509. Bench Vise.	505. Hoe (Garden).	535. Sad Iron.
520. Bird Cage.	597. Hose Reel.	
	556. Ice Cream Freezer.	SAWS.
BRUSHES.	561. Ice Tongs.	588. Hand Saw.
600. Flat Paint Brush.	522. Iron Pot.	567. Meat Saw.
612. Kalsomining Brush.	600. Ironing Board.	513. Saw Buck.
616. Oval Paint Brush.		540. Scissors.
614. Paint Brushes.	KETTLES.	523. Scotch Bowl.
572. Scrub Brush.	586. Enamel Tea Kettle.	567. Screw Wrench.
577. Shoe Brush.	524. Iron Kettle.	510. Scythe (Bush Hook).
579. Stove Brush.	533. Nickel Plated Tea Kettle.	596. Sheep Shear.
569. Chisel (Socket).	526. Preserving Kettle.	570. Shelf Bracket.
528. Chopping Bowl.	591. Preserving Kettle (Lipped).	545. Skate (Ladies').
602. Clothes Wringer (Iron Frame).	KNIVES.	564. Skate (Men's Club).
613. Clothes Wringer (Wood Frame).	550. Bread Knife.	583. Sled Cutter.
603. Clothes Wringer (Wood Frame).	537. Carving Knife.	574. Sled.
594. Coal Hod.	551. Kitchen Knife.	592. Snath.
570. Coal Hod (Funnel).	531. Mining Knife.	507. Spade (D. H.).
525. Coffee Mill.	553. Pocket Knife (2 Blades).	547. Spider.
582. Coffee Pot.	552. Pocket Knife (4 Blades).	
583. Coffee Pot (Tin).	538. Table Knife.	SPOONS.
530. Corkscrew.	573. Kraut Cutter.	542. Dessert Spoon.
519. Cradle.	518. Lantern (Tubular).	541. Table Spoon.
512. Curry Comb.	580. Lathing Hatchet.	543. Tea Spoon.
549. Egg Beater.	584. Lawn Mower.	610. Step Ladder.
581. Farina Boiler.	562. Nut Cracker.	619. Stove (Kitchen).
575. Feather Duster.	557. Oil Can, with Faucet.	620. Stove (Laundry).
530. Flour Sifter.	529. Pail (Wooden).	598. Stove Lifter.
617. Flour Sifter.	PANS.	544. Stove Shovel.
	590. Baking Pan.	605. Table (Folding).
FORKS.	527. Dish Pan.	555. Tack Hammer.
502. Four-Tined Fork.	592. Stew Pan.	585. Tea Pot.
503. Four-Tined Manure Fork.	601. Plate Drainer (Wire).	571. Trowel (Garden).
501. Spading Fork.	517. Pruning Shear.	615. Vegetable Boiler (Wire).
504. Three-Tined Hay Fork.	RAKES.	578. Vegetable Slicer.
539. Table Fork.	516. Steel Garden Rake.	534. Wash Board.
545. Frying Pan (Acme).	515. Steel Bow Garden Rake.	589. Wash Board.
546. Frying Pan (Common Lip).	RANGES.	532. Wash Tub.
505. Garden Hose.	621. Kitchen Range.	604. Washing Machine (Round).
559. Grain Scoop.	618. Steel Range.	607. Washing Machine (Square).
508. Grass Hook.	554. Razor.	608. Water Cooler.
548. Griddle.	606. Refrigerator.	511. Watering Pot.
		611. Whitewash Head.
		521. Wire Toaster.

POST OR EXPRESSAGE PAID.

Circulars Illustrating Iron Age Advertising Cuts Mailed on Application.

DAVID WILLIAMS COMPANY, - - 232-238 William Street, New York.

Help Wanted.

Undisplayed Advertisements for Help Wanted not exceeding fifty words, including address, One Dollar each insertion. Additional words two cents each.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mistaid and lost. A copy of the reference will serve the purpose.

TOOL STEEL SALESMAN.—Wanted, a traveling salesman, to be thoroughly acquainted with the selling of tool steel in all its branches; must be well connected and fully familiar with the needs of trade in territory covered by New York City, State and New Jersey; applications received only by letter addressed to Wheelock, Lovejoy & Co., Post Box 2837, New York City.

FOREMAN for molding department in steel casting plant, age 25 to 35; temperate; thoroughly competent in the most modern practice; able to handle a large number of men successfully; excellent opportunity to secure a permanent and remunerative position; state age, experience in detail, salary required and references. Address "Molding," care *The Iron Age*, New York.

WANTED.—Competent and experienced **SALESMAN**; must be thoroughly posted in the line of electric cranes and preference will be given to one who is familiar with the trade in the Pittsburgh district. Pawling & Harnischfeger, Milwaukee, Wis.

CATALOGUE AND ADVERTISING MAN. by a Canadian wholesale hardware house. Apply, stating age, experience and salary expected to "Canadian," care *The Iron Age*, New York.

CHILLED ROLL.—A competent man to take charge of the manufacture of chilled rolls; must thoroughly understand the mix and operation of air furnace; references required; to the proper man will pay a good salary. Address Braddock Machine & Mfg. Company, Braddock, Pa.

Large foundry and machine shop with A1 manufacturing and financial facilities wants **SELLING AGENT** for New York City and vicinity, also for Philadelphia; application from experienced men with established trade only will be considered. "Selling Agent," care *The Iron Age*, New York.

BUILDERS' HARDWAREMAN; one thoroughly posted in all branches; competent to estimate from plans and specifications. "Builders' Hardware," care *The Iron Age*, New York.

A thoroughly competent and experienced man to take partnership in and assume management of a prosperous retail hardware business, located in one of the best towns in the Middle West. Address "N. & L.," care *The Iron Age*, New York.

CUTLERY SALESMAN familiar with New England trade; must have highest recommendations as to character, ability and experience; a young man preferred; state age, references and salary expected. Address "Cutlery," Box 103, care *The Iron Age*, New York.

WANTED.—First-class all-around boiler-maker to take position of **ASSISTANT FOREMAN** modern boiler shop employing 200 men; must be able to personally manage the erecting floor. Address, giving age, experience and compensation desired. Struthers, Wells & Co., Warren, Pa.

An **OPEN HEARTH MELTER**; state experience and recompense expected. Address "Open Hearth," Box 103, care *The Iron Age*, New York.

Experienced **HARDWARE SALESMAN** wanted to travel the New England States on commission with a staple line of shelf hardware which has been on the market continuously for 25 years; also one to cover Canada and a resident Chicago agent. Address, stating other lines carried. "M. N. O.," Box 103, care *The Iron Age*, New York.

A man about 30 years of age, to sell steel in New York City and vicinity. Address "Steel Salesman," care *The Iron Age*, New York.

A thoroughly experienced **ANALYTICAL CHEMIST** wanted immediately, with some years' experience in blast furnace work, especially in the manufacture of soft foundry iron; address, giving qualifications and references and stating salary expected; applicants will require to be posted in the burdening of furnace and in the making of quick assays by modern methods. Address "Superior," care *The Iron Age*, New York.

MECHANICAL ENGINEERS.—We are continually increasing our output of elevating, conveying, crushing and screening machinery, and wish to correspond with competent engineers, trained in this class of work, who are open for engagements. Address the Aultman Company, Canton, Ohio.

MASTER MECHANIC at a blast furnace in Eastern Pennsylvania; one competent to superintend small machine, carpenter and blacksmith shops, and to take charge of boilers, engines and machinery, such as is usual at blast furnaces. Address, with references, "Blast Furnace," care *The Iron Age*, New York.

A concern owning plate iron works, with capacity to turn out heavy tanks, boilers, stacks, &c., desires to engage New York representative on commission; to one in a position to control business liberal inducements will be offered. Address "P. I. W.," care *The Iron Age*, New York.

One first-class experienced **CHAIN MAKER**, with view of manufacturing logging chains, &c. Address "Chain Maker," care *The Iron Age*, New York.

First-class **CUTLERY** and **SPECIALTY SALESMEN** to sell a high-grade popular priced and complete line of long blade cutlery specialties, including all sorts of butchers' cutlery, kitchen knives, bread knives, paper hangers' knives, &c.; only men traveling specific territory regularly and who can sell goods wanted; to such we will make liberal commission proposition. Address "Long Blade," care *The Iron Age*, New York.

Experienced **HARDWARE** or **CUTLERY SALESMEN** who thoroughly canvass one or two of the following States: Pennsylvania, Michigan, Indiana, Illinois, Kentucky, Missouri, Kansas, Colorado, Montana and coast, to take a side line of miscellaneous cutlery, butcher, putty and kitchen knives, &c. Address "Big Cut," care *The Iron Age*, New York.

Situations Wanted

Undisplayed Advertisements for Situations Wanted not exceeding twenty-five words, including address, Fifty cents each insertion. Additional words two cents each.

By a **MECHANICAL ENGINEER** of 20 years' experience as superintendent of construction and repairs for a manufacturing company; thoroughly familiar with steam and water power, transmission machinery, water power development; satisfactory references. Address "Bradford," care *The Iron Age*, New York.

As **MASTER MECHANIC** and **CHIEF ENGINEER**; technical education; 18 years' practical experience; able to install and repair complete equipment of steam plant; eight years in present position; satisfactory reasons for changing; highest references. Address "Wrigley," care *The Iron Age*, The Cuyahoga, Cleveland, Ohio.

CHEMIST.—An experienced chemist desires position; blast furnace or steel laboratory preferred; good references. Address "Chemical," care *The Iron Age*, New York.

As **SUPERINTENDENT** or **FOREMAN** in O. H. steel plant; over 20 years' practical experience in the manufacture of all grades of steel, acid or basic; good handler of men; best of references. Address "O. H. Steel," care *The Iron Age*, New York.

MACHINERY SALESMAN desires change; well balanced combination of engineering skill and commercial tact; steam plants, power transmission, elevating and conveying machinery. Address "Varsatile," care *The Iron Age*, New York.

An energetic, capable man, with several years' experience as traveling salesman and office manager, desires position; personally acquainted with wholesale and retail hardware trade through the West; highest references. Address "Cooper," care *The Iron Age*, New York.

Capable **TELEGRAPH OPERATOR**, **STENOGRAPHER** and **TYPEWRITER**; one experienced in railway service and pig iron industry; familiar with duties as purchaser of supplies and a good correspondent; desires change by January 1. Address "T. O. S.," care *The Iron Age*, New York.

By a married man, 36 years old, ten years' experience, some road experience, a position in a hardware store. Address A. M. Bannister, Putnam, Conn.

Experienced **FOUNDRY FOREMAN** wishes to make a change; light or heavy work; engine and general jobbing. Address "F. E. F.," care *The Iron Age*, New York.

SALESMAN or **AGENT**, eight years' experience Chicago trade, desires position with manufacturing or wholesale hardware firm. Address "Box 21," care *The Iron Age*, Fisher Building, Chicago, Ill.

SALESMAN, BUYER or **MANAGER**; active, enterprising hardwareman familiar with all allied lines; 20 years' experience; retail and wholesale. Address "Gray," 28 Hillside avenue, Providence, R. I.

A practical **ROLLING MILL MANAGER** and **SUPERINTENDENT** with over 20 years' experience in first-class mills; conversant with the rolling of all structural shapes; would like similar position; good reference. Address "Y. I. S.," care *The Iron Age*, New York.

Change of location desired by well educated American, 36, with clean record, of broad mechanical training, competent to organize and superintend machine shop or factory, originate methods or machinery to reduce costs or increase products. "U. P. to Date," care *The Iron Age*, 117-119 South Fourth street, Philadelphia, Pa.

FOREMAN.—Position as furnace foreman by practical young man; experience as chemist and foundryman; best recommendations and references. Address J. W. Flannery, Steubenville, Ohio.

Man of 32, at present treasurer of a steel company and who has held other responsible office positions, wishes to make change; can give good reasons for wishing to do so; best of references; position in vicinity of Chicago preferred. Address Box 18, care *The Iron Age*, Fisher Building, Chicago, Ill.

A **CHEMIST** with nine years' experience desires position in iron and steel work. Address Box No. 19, care *The Iron Age*, 1205 Fisher Building, Chicago.

A **ROLLER** with 30 years' experience in continuous or other mills; can give best of references. Address "E. C. K.," care *The Iron Age*, New York.

At liberty, practical, experienced **SUPERINTENDENT** or **MANAGER**; 15 years with best concerns; sober, reliable, well recommended, systematic, well up in modern shop practice, cost systems and buying; best of references. Address "Liberty," care *The Iron Age*, New York.

As **SUPERINTENDENT** of universal sheared or bar mills, iron or steel; 20 years' experience. "Superintendent," care *The Iron Age*, 117-119 South Fourth street, Philadelphia, Pa.

A gentleman traveling periodically over the Southern States, calling on manufacturers and dealers, is desirous of representing two or three more houses on a commission basis. Address "Ralph," care *The Iron Age*, New York.

Position as **FACTORY MANAGER**; a practical mechanic and thoroughly familiar with most efficient modern methods of management in foundries, machine shops and allied departments; extensive experience as an expert in the management of help and general manufacturing. "Factory Manager," care *The Iron Age*, New York.

ROLL TURNER (age 32) desires a situation in a first-class mill; an active, sober and reliable man. Address "Active," care *The Iron Age*, Hamilton Building, Pittsburgh, Pa.

WANTED.—Active position by man with experience in machine shop, drafting room and other branches manufacturing; references. Box 1429, Boston, Mass.

As **RAILWAY SUPPLY SALESMAN** by business man with years of experience; is well known among railway officials and mill men in West, South and Mexico as an expert mechanic; capable of making estimates and contracts. Address "Railway Supplies," care *The Iron Age*, Chemical Building, St. Louis, Mo.

An experienced bookkeeper, several years with large iron works, desires position in Philadelphia or vicinity; best references as to character and ability. "Bookkeeper," care *The Iron Age*, 117-119 South Fourth street, Philadelphia, Pa.

As **FOUNDRY MANAGER** or **SUPERINTENDENT**; over 20 years' practical experience in all branches; thoroughly understand cupola practice, mixing and melting metals, management of men, making estimates, contracts, &c.; can look after commercial as well as mechanical part of business or solicit trade on road. Address "Foundry Manager," care *The Iron Age*, Chemical Building, St. Louis, Mo.

SECOND-HAND MACHINERY.

LATHES.

No.

- 1P. 32-inch swing, 16-foot bed, New Haven Lathe, compound rest, splined screw feed, power cross feed, has four-speed cone for 4-inch belt, raising blocks to swing 48 inches.
2. 30-inch swing, 14-foot bed, Fifield Lathe, compound rest, rod and screw feed, power cross feed; has raising blocks to swing 38 inches, etc.
- 3P. 21-inch swing, 10-foot bed, Lathe, with elevating rest, rod and screw feed.
- 3½P. 21-inch swing, 10-foot bed, Wright Engine Lathe, with compound rest.
4. Lathe; 20-inch swing, 6½-foot bed, New Haven make, elevating rest.
5. 18-inch swing, 6-foot bed, Muller Lathe, compound rest.
6. 18-inch swing, 6-foot bed, Muller Lathe, with plain rest.
19. One 18-inch swing, 6-foot bed, Lodge & Davis Lathe, compound rest.
45. 16-inch, 6-foot bed, Reed Lathe, elevating rest.
46. 15-inch swing, 6-foot bed, Prentice Bros. Lathe, elevating rest.
47. 15-inch swing, 6-foot bed, Windsor Lathe, elevating rest.
- 7P. 15-inch swing, 5-foot bed, Pratt & Whitney Plain Turning Lathe, elevating rest.
8. 14-inch swing, 6-foot bed, Goddard Lathe, compound rest.
9. Lathe; 14-inch swing, 6-foot bed, Robbins make, elevating rest.
131. 14-inch swing, 6-foot bed, Reed Lathe, elevating rest.
132. 14-inch swing, 6-foot bed, Reed Lathe, elevating rest.
133. 14-inch swing, 6-foot bed, Goddard Lathe, compound rest.
10. Lathe; 14-inch swing, 6-foot bed, Hendey-Norton make, with plain rest; also has taper attachment and one 6-inch combination three-jaw chuck fitted and one 8-inch four-jaw independent chuck fitted.
- 11P. 14-inch swing, 5-foot bed, Lathe, plain rest.
12. 14-inch swing, 5-foot bed, American Tool Company Speed Lathe, with set over and swivel tail stock; has 4-inch chuck fitted.
- 13P. 14-inch swing, 4½-foot bed, Putnam Lathe, with elevating rest.
134. 13-inch swing, 6-foot bed, Ames Lathe, elevating rest.
135. 13-inch swing, 6-foot bed, Pratt & Whitney Lathe, elevating rest, fitted with taper attachment.
136. 13-inch swing, 4-foot bed, Pratt & Whitney Lathe, elevating rest.
137. 14-inch swing, 5-foot bed, Pratt & Whitney Speed Lathe.
14. 13-inch swing, 5-foot bed, Lodge & Davis Brass Lathe, back geared, square arbor, set over and swivel tail stock.
15. 13-inch swing, 5-foot bed, square arbor, Brass Lathe, with set over tail stock, chasing bar.
- 16P. 10-inch swing, 4-foot bed, Reed Lathe, plain rest, 6-inch four-jaw chuck fitted; complete with both countershaft and foot motion.

PLANERS and SHAPERS.

17. Planes 25 inches wide, 24 inches high, 8 feet long, Richards' Open Side Planer or Shaper;

has two tables which can be moved to any position on the frame; has power cross and down feed to head.

18. Planes 30 inches wide, 30 inches high, 10 feet long, Sellers make, spiral geared.
- 20P. Shaper; 26-inch stroke, Lodge & Davis make.

DRILL PRESSES.

21. 36-inch swing, Snyder make, back geared, power feed, automatic stop, quick return, fitted with geared revolving table; has 24-inch four-jaw independent Cushman Chuck fitted.
138. 26-inch swing, Prentice Bros. Drill Press, back geared, power feed, sliding head.
139. 24-inch swing, Hamilton Drill, back geared, power feed, with sliding head.
140. 22-inch swing, Barnes Drill, stationary head, back geared, power feed, automatic stop, quick return.
141. Four 20-inch swing Prentice Bros. Drills, wheel and lever feed, quick return.
- 24P. 10-inch swing, Handy Bench Drill; capacity up to ½ inch.
- 25P. Garvin four-spindle Drill Press; spindle 4½ inches from center to center; table fed upward by foot lever.
26. One Dallett Drill, capacity up to 1 inch.
147. 10-inch swing, Stover Sensitive Drill Press.
143. Three-spindle, 10-inch swing, Dwight Slate Drill Press.

MISCELLANEOUS.

144. No. 12 Brown & Sharpe Milling Machine.
27. No. 2 Le Blond Plain, Back Geared Miller; table 10 inches wide, 38 inches long.
- 28P. Milling Machine, Garvin Horizontal, Lincoln pattern, table 26 inches long, 7½ inches wide.
29. Milling Machine, Slate's No. 1, table 5 inches wide, 18 inches long.
- 30P. Milling Machine, for use on bench, 5 x 4 x 12 inches.
- 31P. Cutter Grinder, Wells Bros.' make; mounted on column.
- 32P. 2-inch Pipe Machine, Pancoast & Maule make.
145. 1-inch Acme Bolt Cutter.
- 33P. 1-inch Bolt Cutter, made by the Brass & Iron Works of Fostoria.
- 34P. 1½-inch Wells Bros. Bolt Cutter.
35. 1½-inch National Bolt Cutter.
36. Power Press, Stiles & Parker make, Fowler pattern.
37. One Whiton Bench Centering Machine.
- 38P. Squaring Shear, blades 30 inches long.
40. Blower, Buffalo No. 10, Steel Pressure.
41. Drop Hammers; 200-lb Waterbury Hand Drop Hammer.
42. One 200-lb. Cady Hand Drop Hammer.
43. Belt Pump; Smithvale Triplex Belt Pump; diameter 3 x 6.
44. Jig Saw, J. A. Fay make, table 36 x 36 inches.
48. 3 H. P. Newell Gas Engine.
- 49P. Blower, No. 2 Sturtevant Steel Pressure Blower
- 49½P. Blower, Root's Positive Blower, No. ½.
146. 1½-inch National Bolt Cutter.
147. Bardons & Oliver Screw Machine, takes 1½-inch stock through automatic chuck and wire feed, has power feed to the turret.
148. Warner & Swasey Screw Machine, takes ¾ stock through automatic chuck.

The S. M. York
Machinery Co.,
 CLEVELAND, OHIO.

GEORGE H. BOWLER, Dealer, Broker, Appraiser and Trader In MACHINERY.

Second-Hand Machinery For Sale Located as Follows:

CLEVELAND, O.—Warehouse, 20-22 Frankfort St.

LATHES.
1 46 in. x 17½ ft. Eng. Lathe.
1 14 in. x 6 ft. Star.
1 16 in. x 6 ft. Flatther.
1 24 in. x 16 ft. New Haven.
1 16 in. x 6 ft. Lodge & Davis.
8 10 in. x 42 in. Speed Lathes.
1 16 in. x 6 ft. Pratt & Whitney.
1 18 in. x 6 ft. Pratt & Whitney.
1 28 in. x 10 ft., with Turret.
1 20 in. x 10 ft., with Turret.

SHAPERS.
1 20-in. Kelly (new).
1 10-in. Sellers (traverse).
2 16-in. Steptoe.

DRILLS.
1 20-in. Lodge & Davis.
3 16-in. Prentice.
1 18-in. Prentice.

10 20-in. Prentice.
2 20-in. Baker Bros.
8 Sensitive, Dwight Slate.
2 P. & W. Gang Drills.

MILLING MACHINES.
1 No. 4 Lodge & Davis Univ.
1 Brown & Sharpe Universal.
1 Hand Miller, Garvin.

POWER PRESSES.
1 No. 1 Cady, weight 900 lbs.
4 No. 74½ Bliss Geared.
2 No. 75½ Bliss Geared.
1 No. D75 Ferracute Geared.
2 No. 56C Toledo Geared.
1 No. 58C Toledo Geared.
1 175-lb. Drop Press, 4 poppet.

SCREW MACHINES AND TURRET LATHES.
3 No. 4 Bardons & Oliver.

1 1½-in. Lodge & Davis.
71 Cleveland Automatic (all sizes).

ENGINES.
10 Small Slide Valve, 4 to 10 H. P.
1 12 in. x 24 in. Slide Valve.
1 14 in. x 14 in. Erie City Automatic.
1 14 in. x 30 in. Bates Corliss.
20 others (all sizes).

MISCELLANEOUS.
1 1½ Acme Aut. Bolt Cutter.
1 14 in. x 14 in. x 15 ft. Clayton Air Compressor.
1 12 x 16 x 14 Dwight Pump.
1 Heavy Hot Nut Machine.
1 Metal Cutting Band Saw.
1 Set Bending Rolls.
35 Polishing Lathes.
4 Tumbling Barrels.

We list above only a few of 500 machines we have for sale here.

GEORGE H. BOWLER

Has just received for sale all of the machinery and equipment in
SEVEN COMPLETE BICYCLE FACTORIES LOCATED AS FOLLOWS:
INDIANAPOLIS, IND.—One Bicycle Factory.

LATHES.
2 14 in. x 6 ft. Prentice.
4 14 in. x 6 ft. Bradford.
4 14 in. x 6 ft. Flatther.
1 14 in. x 6 ft. Lodge & Davis.

DRILLS.
14 20-in. Barnes, wheel and lever.
10 20-in. Various makes, power feed.
10 Dwight Slate Sensitive.

MILLING MACHINES.
8 Garvin, Lincoln Pattern.
5 Pratt & Whitney, Lincoln.
3 Cincinnati, Plain.
2 Brainard, Gear Cutters.
4 Garvin, Plain.

SCREW MACHINES.
43 Pratt & Whitney (all sizes).
10 Garvin.

POLISHING MACHINES.
60 Diamond, 2-Spindle.
10 Strapping Machines.

MISCELLANEOUS.
1 1-in. National Bolt Cutter.
4 Tapping Machines.
1 Spoke Header.
1 2½ H. P. Gas Engine.
10 Emery Stands.
1 Water Emery Grinder.
1 Power Hammer, 50 lbs.

TOLEDO, O.—Two Bicycle Factories.

LATHES.
6 13 in. x 4 ft. Pratt & Whitney.
5 Pratt & Whitney Speed Lathes.
SCREW MACHINES.
4 Pratt & Whitney.
1 Windsor.

MILLING MACHINES.
14 Pratt & Whitney, Lincoln.
1 No. 3. Reed, Plain.
6 Pratt & Whitney, Plain.
1 No. 2 Cincinnati, Plain.
8 Pratt & Whitney, Hand.

PRESSES AND PUNCHES.
1 No. 4 Long & Allstatter Punch.
2 Stiles & Parker Presses.

POLISHING LATHES.
25 Various makes.

DRILLS.
1 No. 2 P. & W., 6-Spindle.

BICYCLE MACHINERY.
Large assortment.

PLANERS.
1 22 x 22 x 5 Putnam.
MISCELLANEOUS.
1 Garvin Aut. Hub Machine.
1 Aut. Cutter Grinder.
1 Rlm Rolling Outfit.
1 Water Emery Grinder.
1 5-Spindle Nat. Nut Tapper.
1 10-in. P. & W. Shaper.
1 P. & W. Surface Grinder.
1 Die Sinking Machine.
3 Blowers.
1 Screw Slotter.

ELYRIA, O.—Two Bicycle Factories.

Lathes, Drills, Milling Machines, Polishing Machines, Power Presses. Send for list.

BUFFALO, N. Y.—Two Bicycle Factories.

LATHES.
9 13 x 4 Sebastian May.
SCREW MACHINES.
10 Cleveland Automatic.
1 Pratt & Whitney.
POLISHING LATHES.
25 all makes.

DRILLS.
1 Aurora, 20-in.
2 Baker Bros., 20-in.
1 Barnes, 24-in.
5 Barnes, 20-in.
4 Slate, Sensitive.

DYNAMOS.
1 Kester, 300 light inc.
2 Plating.

BLOWERS.
1 Small Root.
3 3 Pressure.
3 Exhaust.
OFFICE FURNITURE.
Complete outfit.
MISCELLANEOUS.
75 Various Small Machine Tools.

QUICK SALES AND LOW PRICES.

The above lot is our list of light machinery. Send for list of heavy machine tools.

1275 PIECES OF MACHINERY FOR SALE.

Largest Stock of Tools in the Country.

Address all inquiries to

GEORGE H. BOWLER,

513 Williamson Bldg.,
Cleveland, Ohio.

PROMPT SHIPMENT ON ALL TOOLS.

We also have 12 manufacturing plants, 11 of which are in live towns, which we can sell for very small considerations and can procure for the right purchasers liberal concessions, additional capital and other desirable items.

WE WANT TO BUY MORE GOOD MACHINERY.

WESTMORELAND STEEL & MFG. CO.,

MANUFACTURERS OF

Tool Steels, High Grade Steel Bars, Small Angles, Die Blocks, Forgings and Hammered Bars.

L. D. 'Phone 3716.

PITTSBURG, PA.

BOLT CUTTERS

H. B. BROWN & CO.,

East Hampton, Conn.

Send for Catalog.

Trade-Mark—1897—Registered.



HAWKRIDGE BROS. STEEL.

Every description of

New England Agents for SANDERSON BROS. STEEL CO. PARK STEEL CO.

Discs of all grades cut from the bar promptly at our store.

303 Congress Street, BOSTON, MASS.
Cor. Dorchester Ave.,

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Analyses of Pig Iron. Containing information for foundrymen relative to the effect produced on castings by various constituents of iron; an article on the grading of pig iron; and many analyses of brands of pig iron from the various sections of the U. S. and from foreign countries. By Seymour H. Church. 173 pages. 4to, leather. \$2.50

Elements of Glass and Glass Making. A treatise designed for the practical glass maker, comprising facts, figures, recipes and formulas for the manufacture of glass—plain and colored. With an appendix containing useful information pertaining to the subject. By Benjamin F. Riser. Chemically revised by S. A. Koch, Ph.D. Illustrated. 8vo, cloth. \$3.00

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The Naval Architect's and Shipbuilder's Pocket Book of Formulae, Rules and Tables; and Engineer's and Surveyor's Handy Book of Reference. By Clement Mackrow. Seventh edition. Illustrated. 16mo, limp leather. \$5.00

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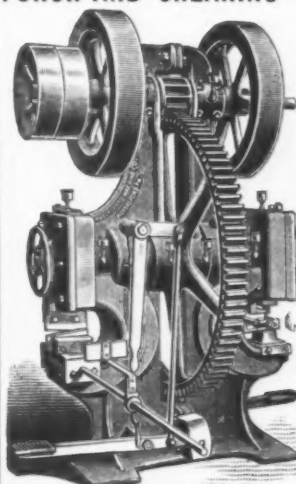
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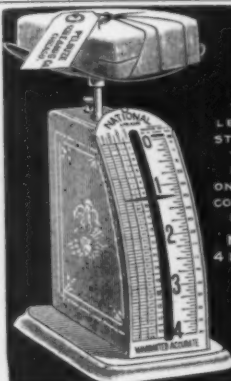
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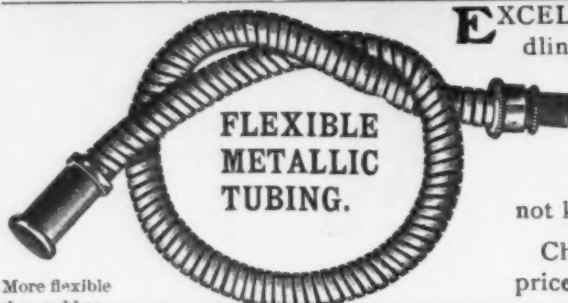
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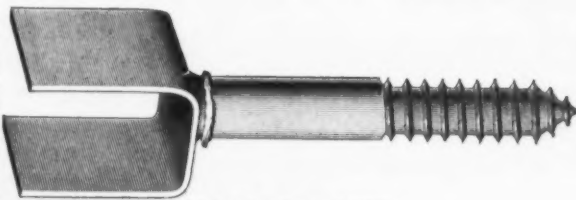
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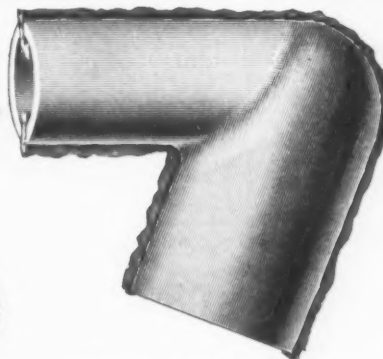
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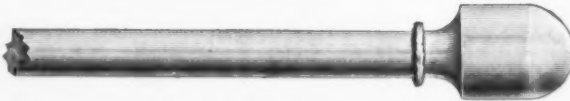
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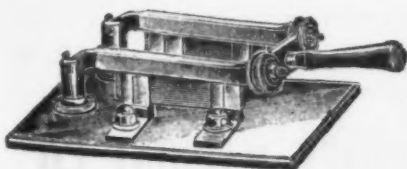
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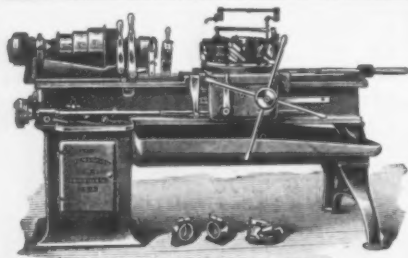
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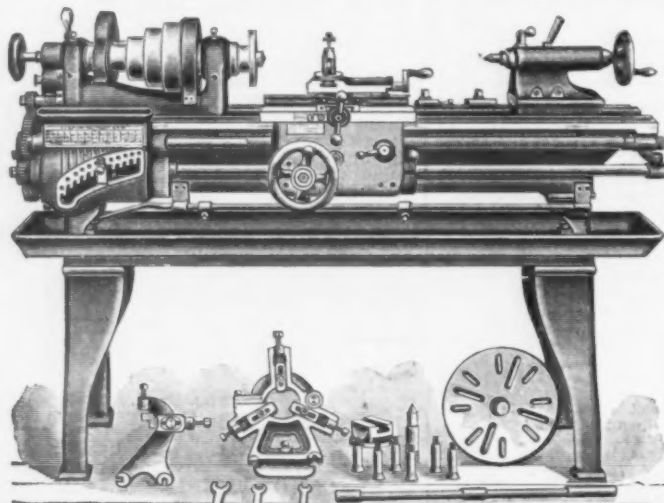
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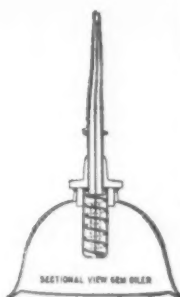
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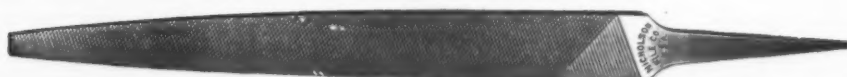
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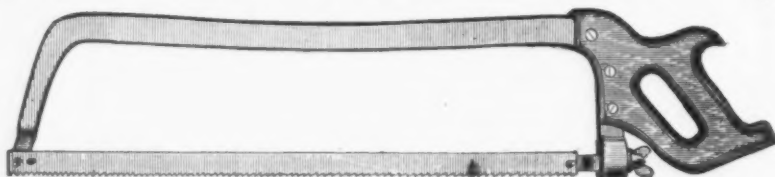
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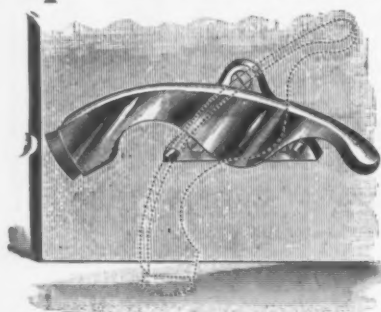
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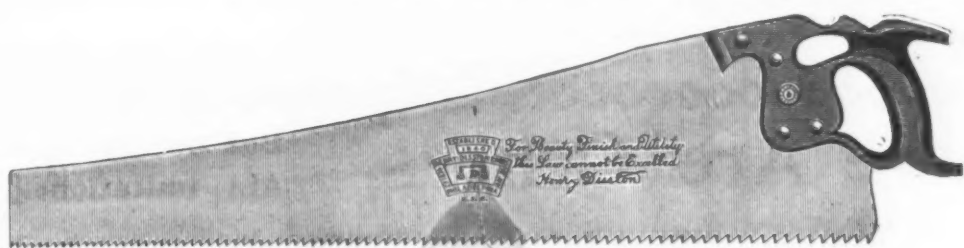


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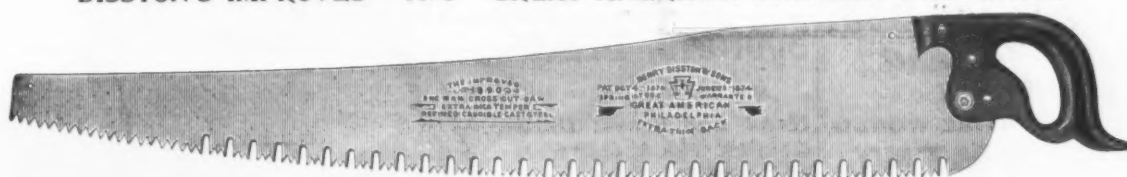
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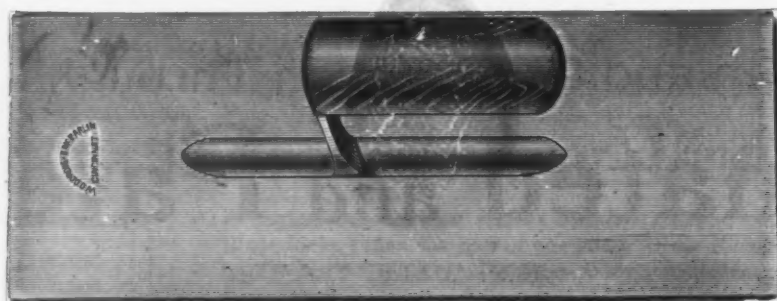
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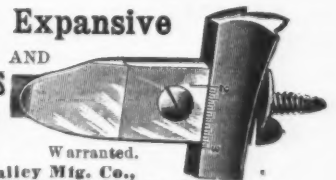
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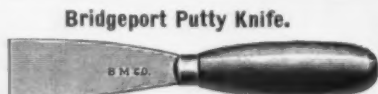
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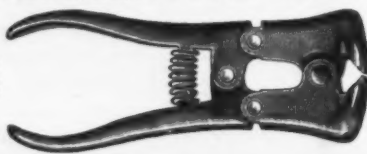


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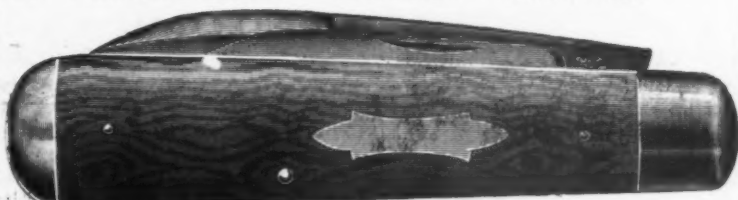
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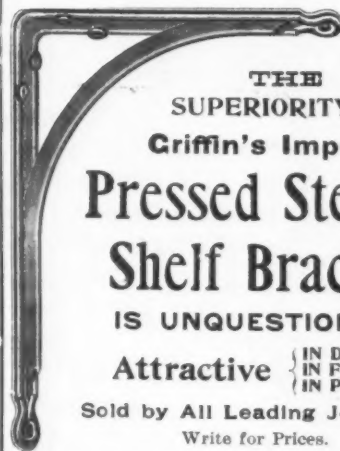
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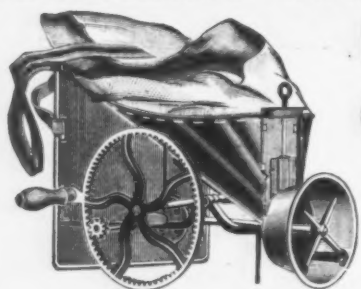


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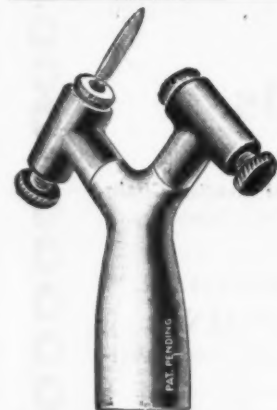
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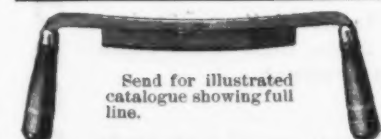
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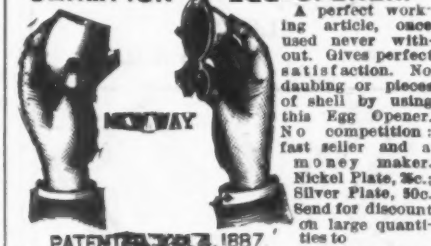
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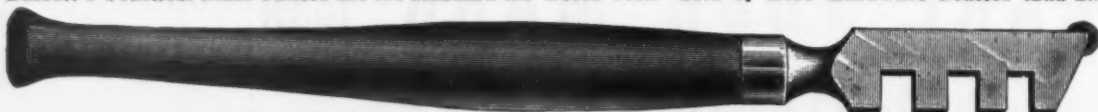
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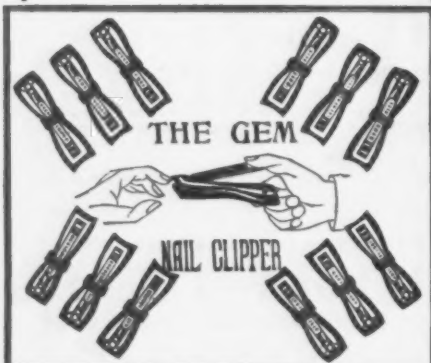


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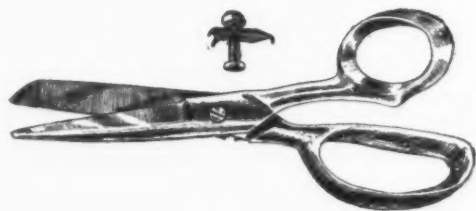
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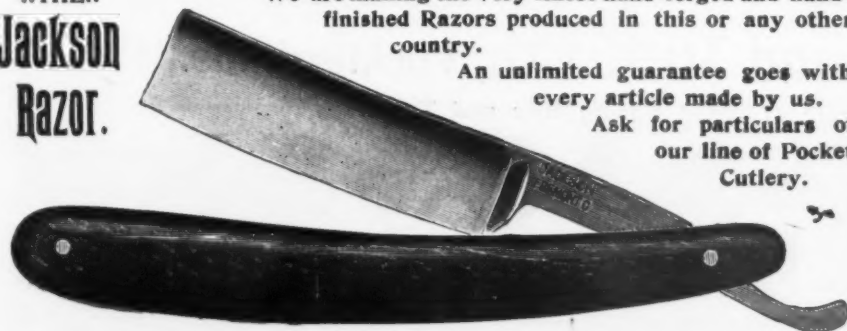
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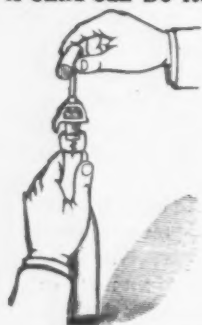
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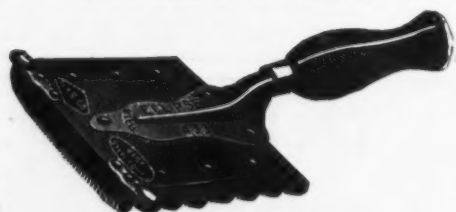
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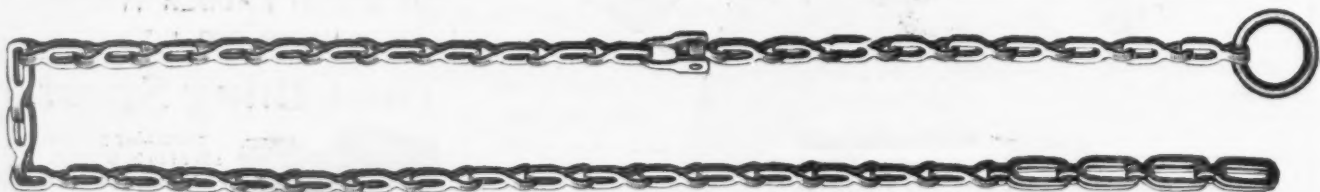


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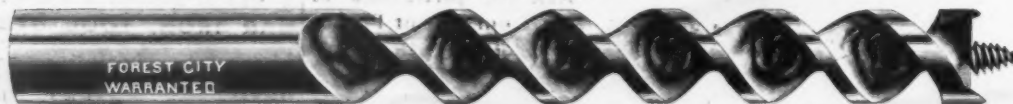


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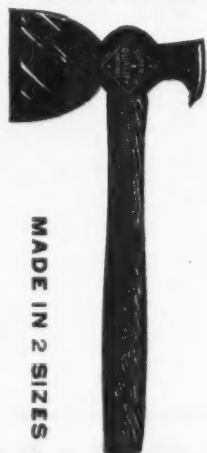


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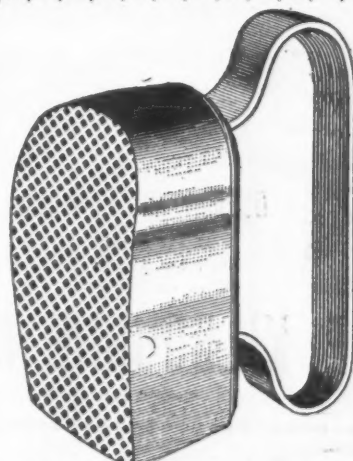
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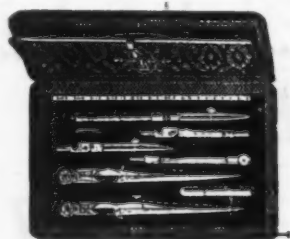
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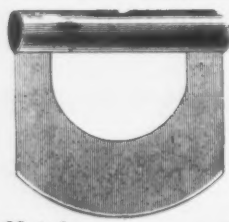
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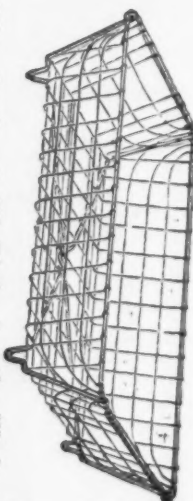
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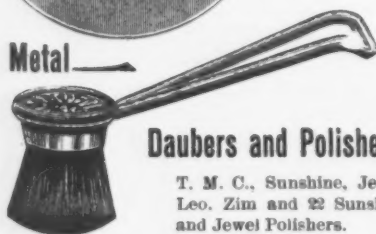
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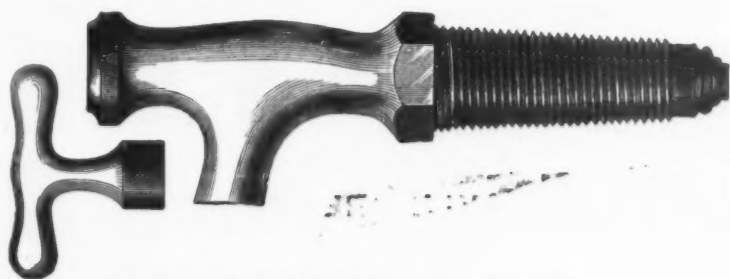


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Burglar Proof
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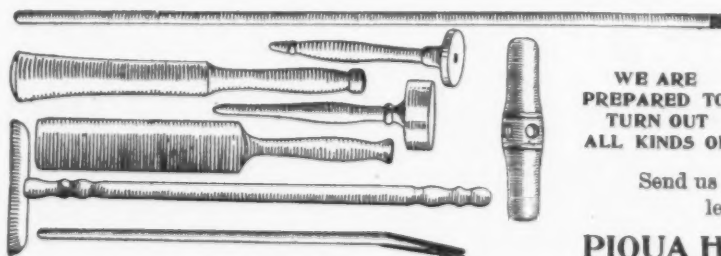
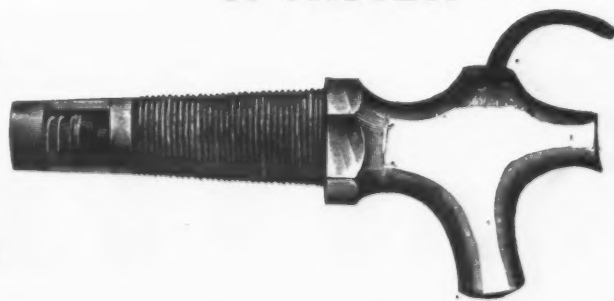
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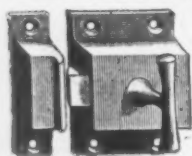
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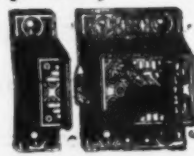
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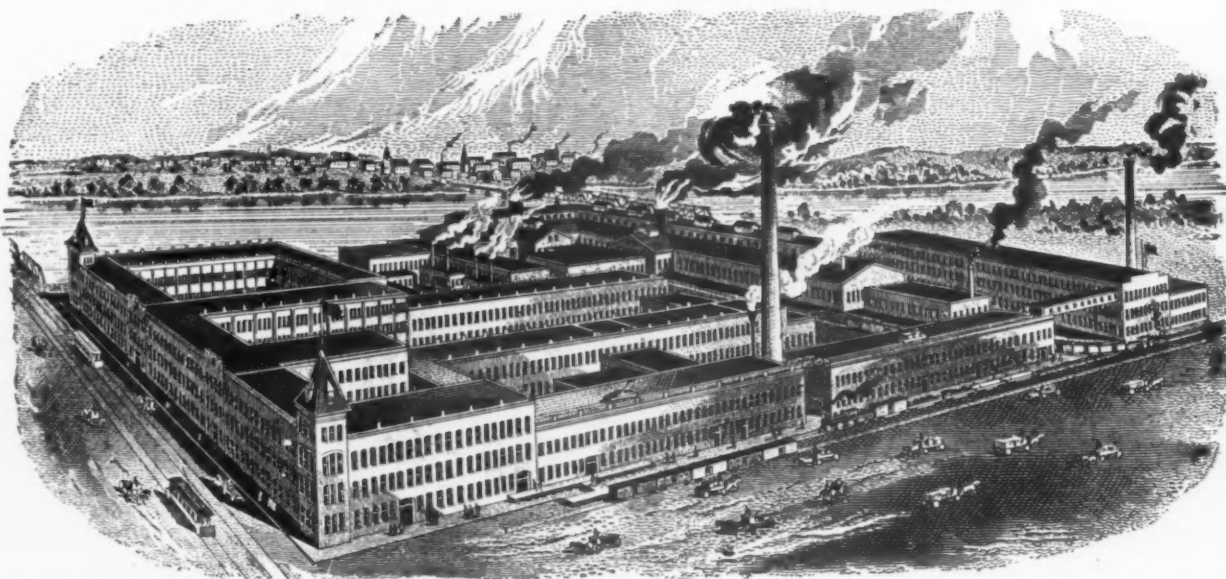
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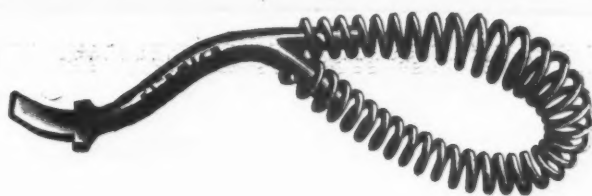
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PARIS EXPOSITION, 1900

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TO ALL OUR

Friends

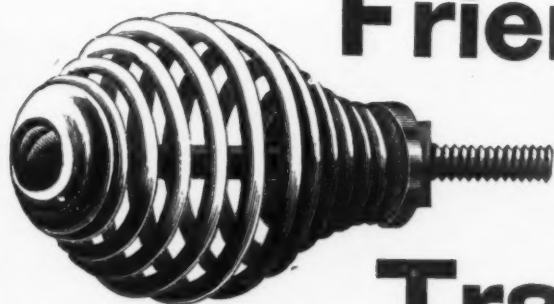
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ALWAYS



..COLD..

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We ran them ourselves.

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We don't run all our machines now as we did in 1874.
But we run the business just the same.

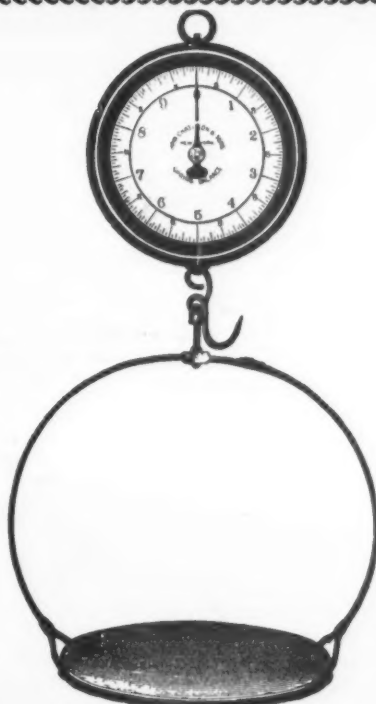
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NOTICE.

OUR attention having been called to the fact that inferior makes of Spring Scales are being sold to butchers as "Chatillon" Scales, we deem it due to the trade and to ourselves, in order to protect the merits of our Spring Scales, so well and favorably known for more than sixty years, to inform you that every Spring Scale manufactured by



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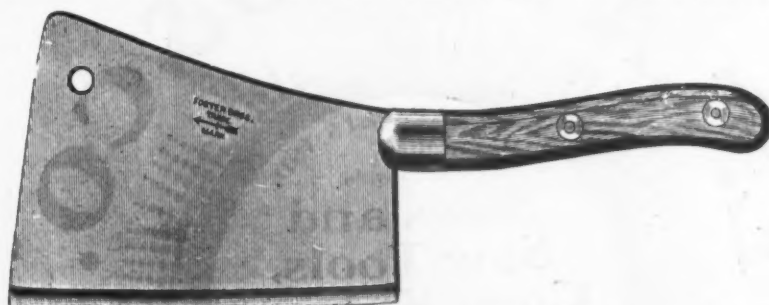
John Chatillon & Sons.
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New York, U.S.A.

and any scale without this name on the dial is *not a genuine Chatillon Scale.*

JOHN CHATILLON & SONS,
Established 1835.

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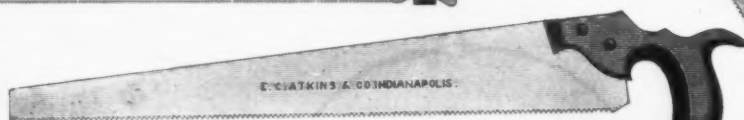
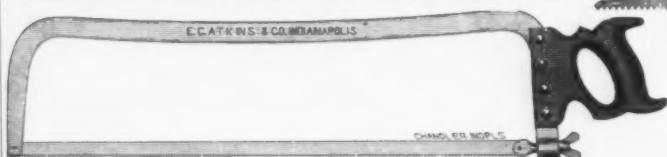
Finest quality American Pocket Cutlery in large variety—Knives that are good sellers and will give satisfaction to the user.

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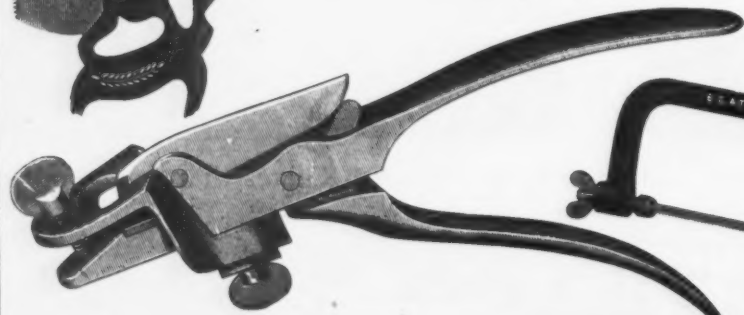
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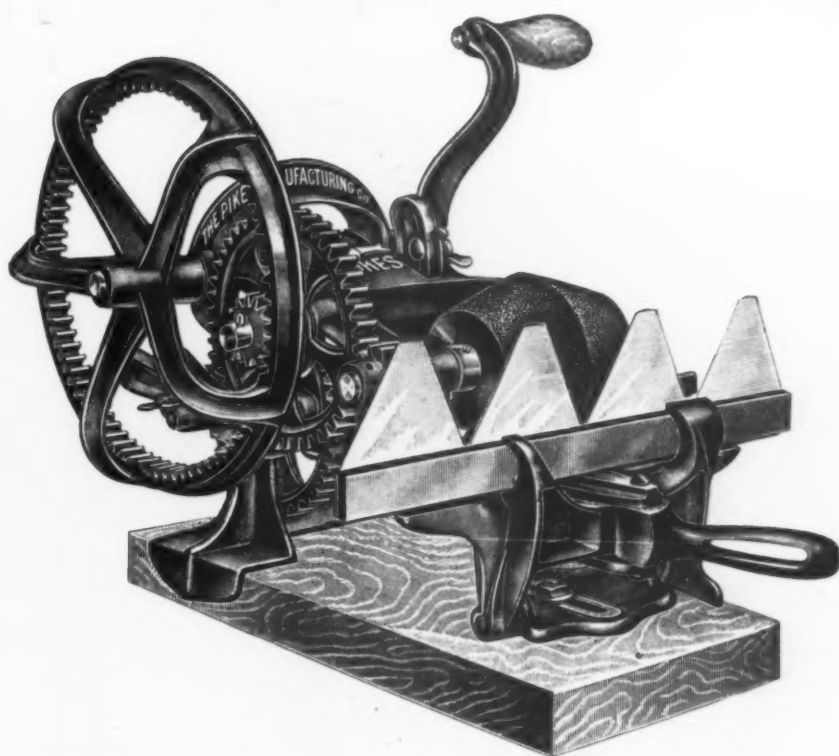
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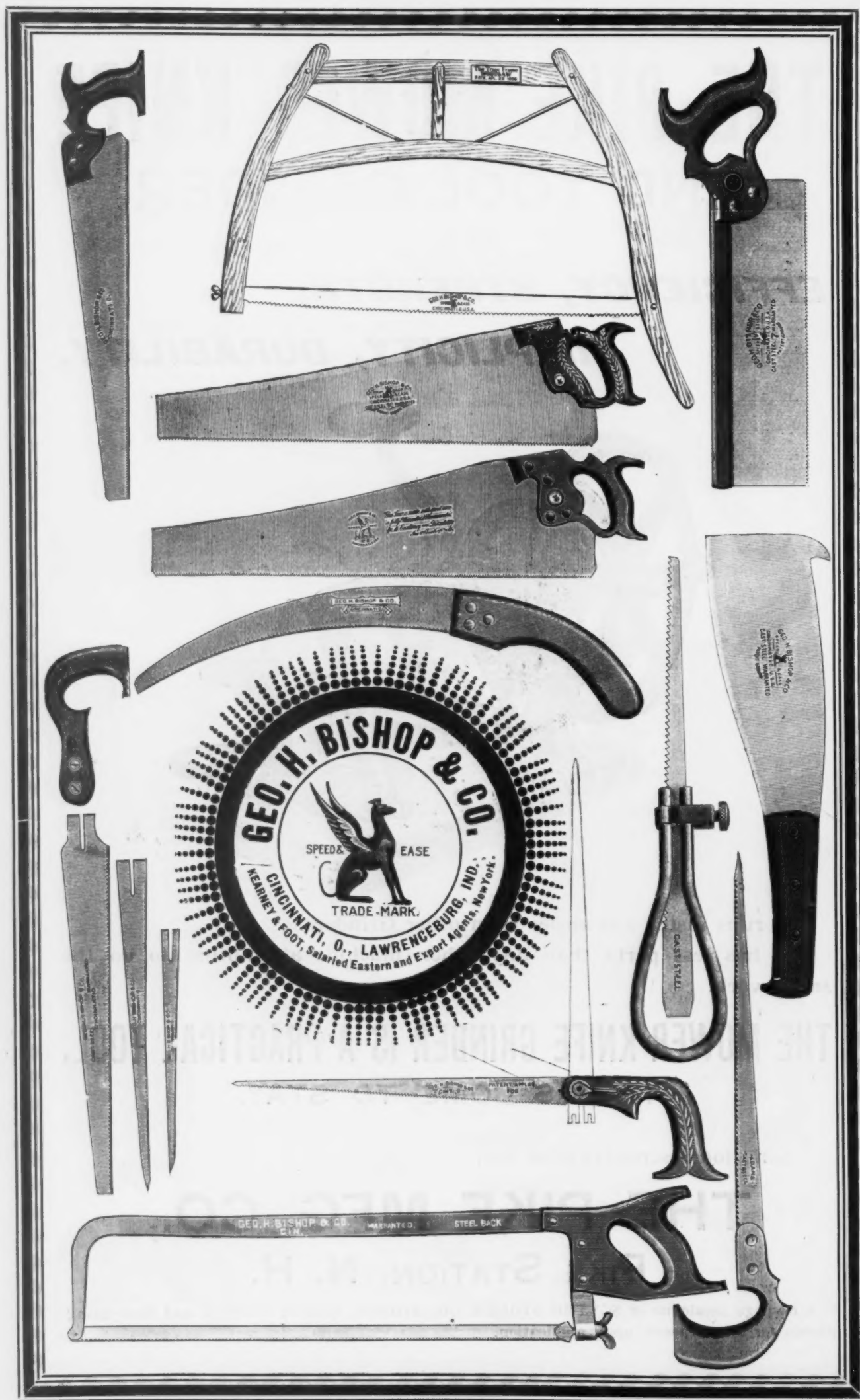
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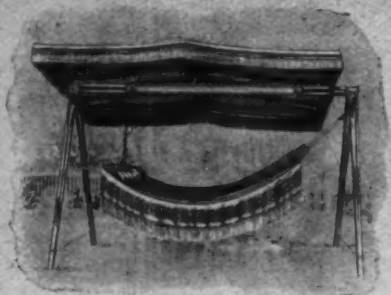
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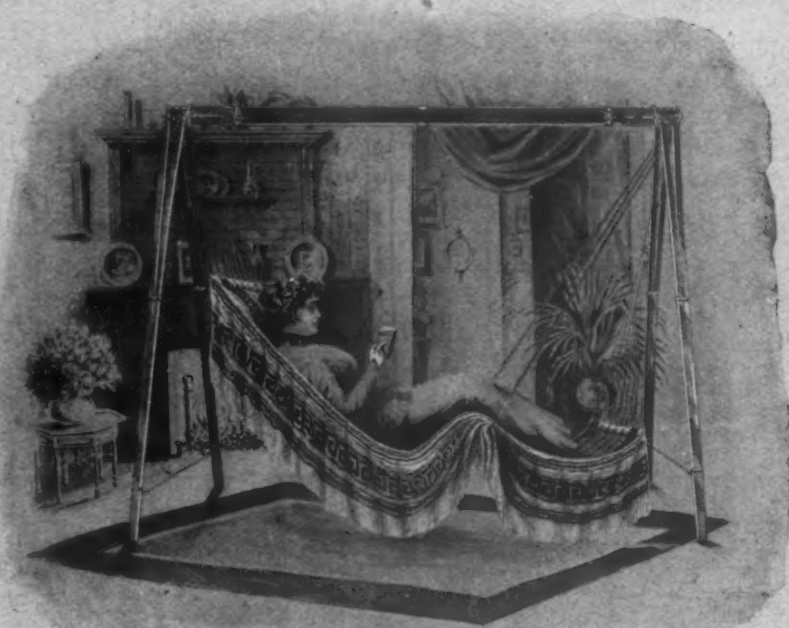
PALMER'S
PATENTED



CUT NO. 230
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SUPPORT FURNISHED WITH
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HAMMOCKS

HIGHEST
AWARD



PARIS
1900

CUT NO. 270
UTÓPIA HAMMOCK WITH SUPPORT.

The above Figure represents a reclining position in an adjustable Hammock Support as used indoors. This support may be extended or contracted. The Seat may be lowered or raised by the adjustment of the side cords where attached to the seat.

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For indoor, summer or winter use, it will appeal to all who are inclined to ease and comfort, as it can be taken from a closet, set up, and Hammock hung ready for use in one minute.

Perfection - Arawana - Utopia.

LARGEST Variety of Patterns, Colors and Accessories. Also
Manufacturer of CANOPIES, MOSQUITO NETTINGS,
CRINOLINE DRESS LIN-
ING, WINDOW SCREEN
CLOTH, SCHOOL BAGS,
etc., etc.

Send for Our
New Catalogue for 1901.

I. E. PALMER,
MIDDLETOWN,
CONN., U. S. A.



CUT NO. 245
ARAWANA HAMMOCK SUSPENDED FROM HAM-
MOCK SUPPORT, WITH AWNING AND MOS-
QUITO NET CANOPY—CANOPY OPEN.



CUT NO. 210
ARAWAN HAMMOCK WITH MOS-
QUITO NET CANOPY—
CANOPY CLOSED.

New York Office, 82 White St.
INFRINGEMENTS ARE BEING PROSECUTED.

THE IRON AGE.

PORTER SCREEN MANUFACTURING CO.

BURLINGTON, VT.

MAKERS OF

High Grade Screen Doors And Window Screens

Prompt Shipments



Large Variety



New Designs

THE HUMMER
With Long Metal Clips



SEND FOR CATALOG

Porter Screen Manufacturing Co.

BURLINGTON, VT.

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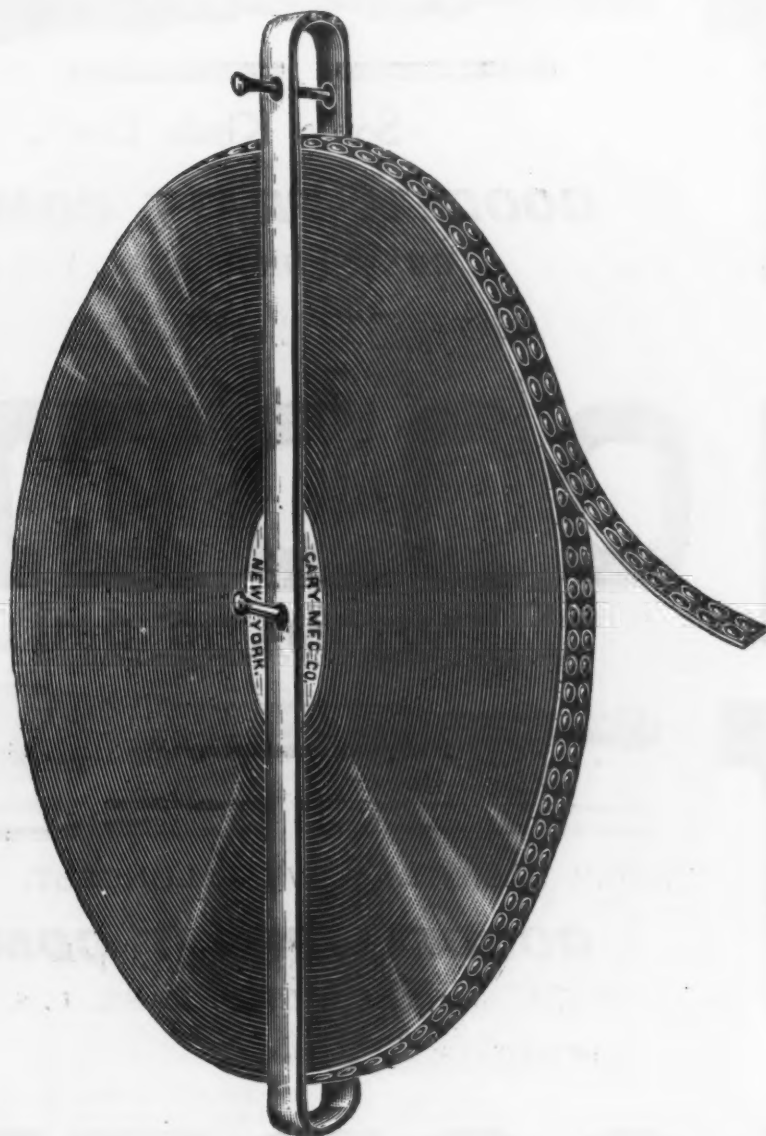
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CA

Als

CARY'S UNIVERSAL BOX STRAPPING

Put up in
coils 300 feet
in length,
and packed
in cases
containing
20 reels
each.



Made in
four widths,
viz.:
 $\frac{1}{2}$, $\frac{5}{8}$,
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1 inch.

PATENTED IN ALL COUNTRIES.

SPECIAL PRICES FOR EXPORT.

CARY MANUFACTURING CO., 19 and 21 ROOSEVELT ST.,

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Also manufacturers of all kinds of Twisted and Flat Wire Box Strapping, Box Corners, Hinges and Hasps
Clasps and other Specialties for Shippers' Use.

G OODELL

Automatic Screw Drivers



*DRIVE
SCREWS.*

Some Kinds Don't.

GOODELL-PRATT COMPANY,
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G OODELL

AUTOMATIC DRILLS.



4
STYLES.



WORK EASIEST. WEAR LONGEST. SELL BEST.

GOODELL-PRATT COMPANY,
GREENFIELD, MASS., U. S. A.

G OODELL

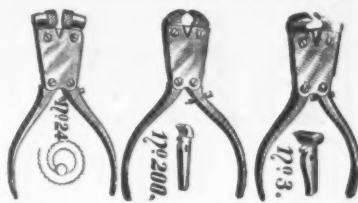
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OUR
CATALOG
TELLS
MORE.

WARRANTED TO SELL.

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**HAVE
YOU EXAMINED**

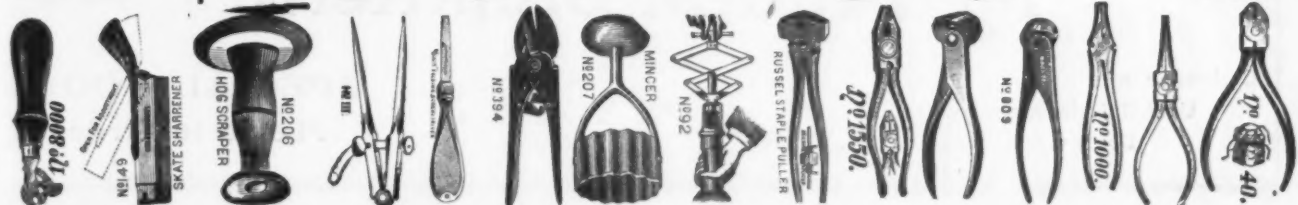
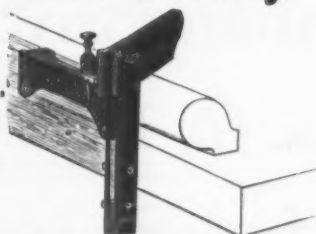
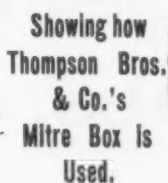


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NEW YORK OFFICES, 296 BROADWAY, N. Y.



Fine American Tools and Cutlery



BEFORE*Placing Orders*

Communicate with

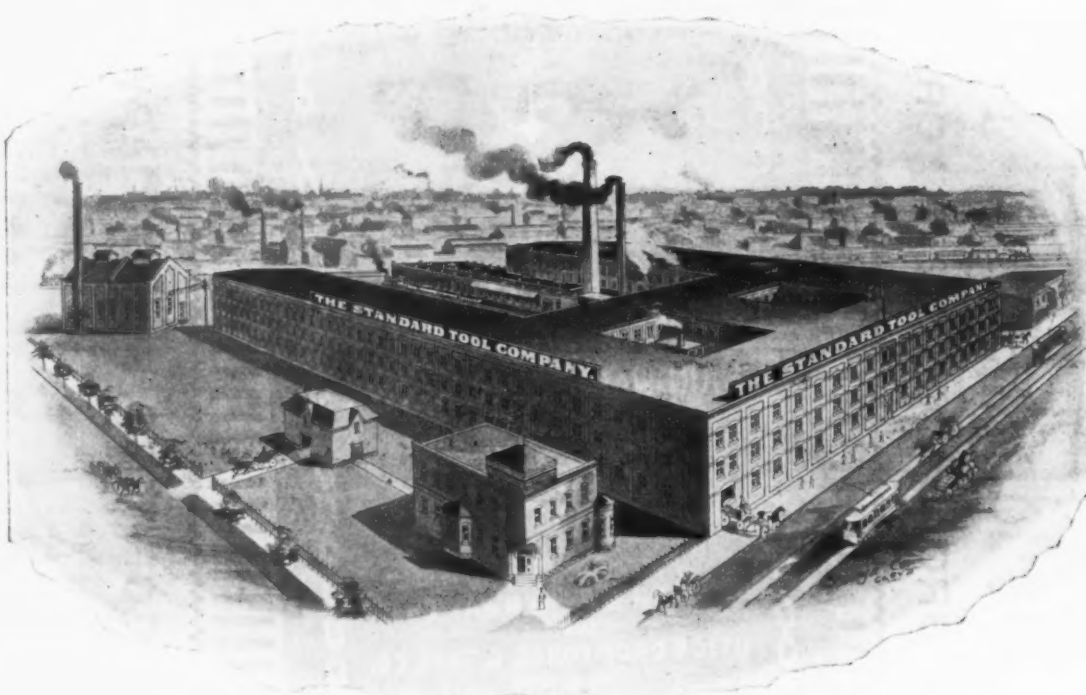
For 1901

THE STANDARD TOOL CO.,

CLEVELAND.



NEW YORK.

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Main Offices and Works,
CLEVELAND, OHIO, U. S. A.



The most complete and best assorted
stock of TOOLS, always ready
for Prompt Shipment.

Calendar of
Useful Information
Free upon Application.



SPECIAL TOOLS
Made to Order.

1839

**RUSSELL & ERWIN
MFG. CO.**

NEW BRITAIN, CONN.

NEW YORK

Chambers Street

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No. Fifth St.

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Marquette Bldg.

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SAN FRANCISCO
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BALTIMORE
So. Charles St.

DAYTON, OHIO

LONDON, ENG.

1901



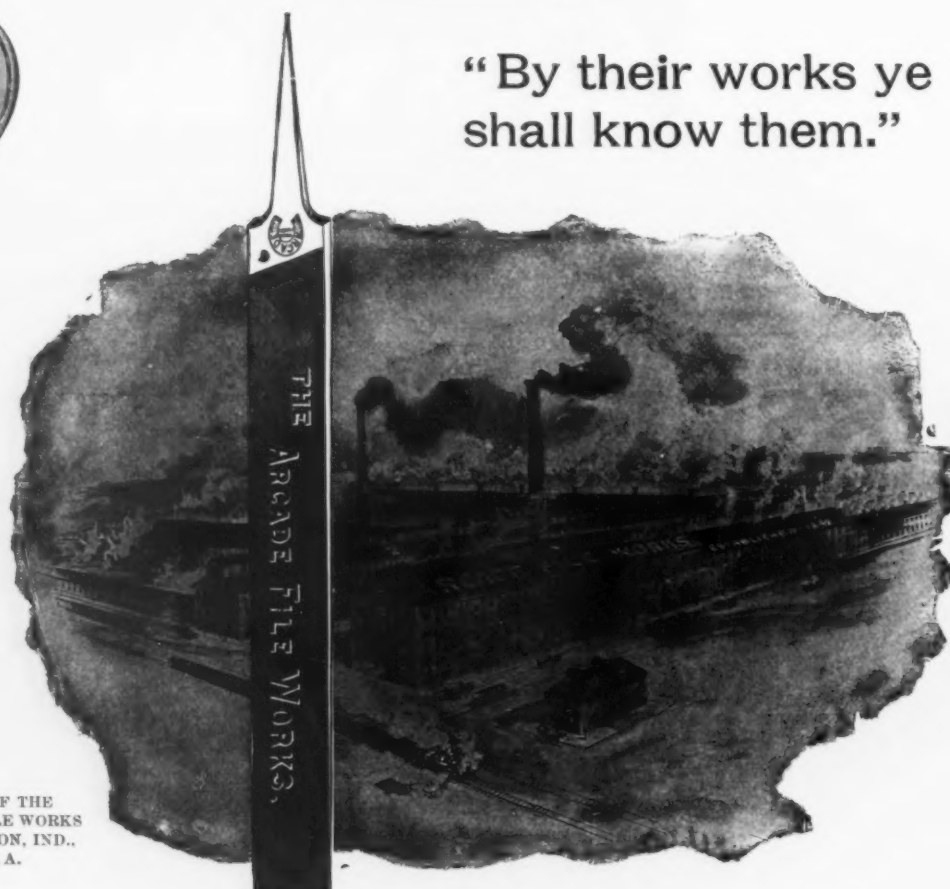
THE WORLD'S GREATEST FILE WORKS.

Established 1842.



"By their works ye shall know them."

PLANT OF THE
ARCADE FILE WORKS
at ANDERSON, IND.,
U. S. A.



BACK of an Arcade File stands the most complete and modern file manufacturing establishment in the world, directed by master minds, originators of a distinctly improved product, sold entirely on its merits, the modern plant insuring best quality. Back of an Arcade File stands this guarantee, "that an Arcade File will cut faster and wear longer than any other file made," and as an "earnest" of this guarantee, the Arcade File Works will send to any responsible Hardware Jobber, Wholesaler or Retailer, one dozen Arcade Files, to become the property of the receiver or returned at our expense if the guarantee is not fully borne out in every particular.

There are new points worth knowing about Files, and the best information is condensed into a neat little volume which we will send free to readers of *The Iron Age* while they last. Ask for "Practical Talks on File Work," and perhaps you would like to know about prices.

New York:
97 Chambers Street.

THE ARCADE FILE WORKS,

Chicago:
118 Lake Street.

Sole Makers of Weed's Patent Increment Cut Files.

Works: ANDERSON, IND., U. S. A.

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Reading Hardware Co.

READING, PA.

Art Hardware



Knob and Escutcheon 1392 x 2846

Design-AVON

Cast Bronze trimmings in this design for Front and Inside doors, windows, etc.

Wrought Steel Butts

ALL
KINDS AND
SIZES...

The
"Reading"
Patent
Sash
Fastener



Draws both
sashes together.
Prevents rat-
tling and sag-
ging of upper
sash.

The New Screw

We are now
making a full
line of

Wood Screws

Bright Iron and
Brass—Flat
and Round
Heads. Nice,
clean, perfect
goods.

"Vassar"

Locks

Are Locks

That are Locks

Furnished in Bronze Metal,
Bronze Plated or
Bronzed Iron.
Plain or Orna-
mented. All Fin-
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NEW YORK
96 and 98 Reade Street

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617 Market Street

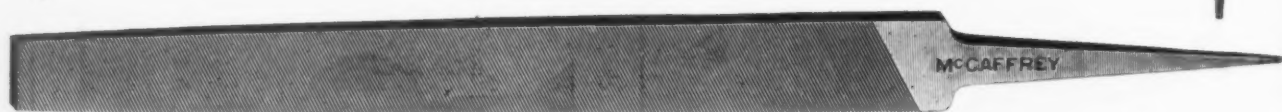
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105 Lake Street

McCAFFREY FILE COMPANY

PHILADELPHIA.

CHICAGO OFFICE,
166 Lake St., Chicago.

EUROPEAN AGENT,
CARL BLOMBACH,
RONSDORF, GERMANY.



These American Standard Files and Rasps were the first American products of their kind to be exported, sold and used in every civilized country on the globe. The President and heads of each department are all practical file makers, hence superior goods are the result.





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AWARD



HIGHEST

AWARD



HIGHEST

AWARD



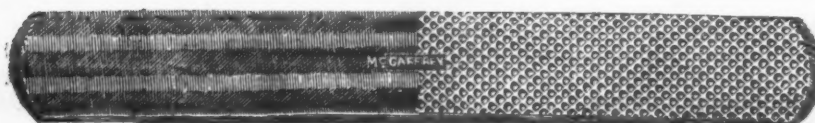
HIGHEST

AWARD



HIGHEST

AWARD



Believe them not who generally say
 A "file's a file," no matter what way
 It is forged, tempered or cut ;
 But believe them who thoroughly know
 That "tried and found true" goods are not for show,
 But for use and thorough use, too :
 These qualities you more fully grasp
 When you sell or use McCaffrey's Files and Rasps.



McCaffrey File Co.,
 Philadelphia.



AMERICAN SCREW CO.



Forged Wood Screws.



Machine Screws.



Drive Screws.



Stove Bolts.



Rivets.



Dowel Screws.



Pointed Wires.



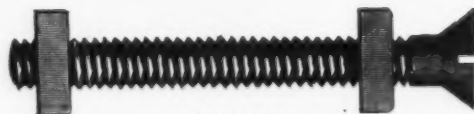
Tire Bolts.



Fluted Tire Bolts.



Sleigh Shoe Bolts.



Sink Bolts.



Wire Nails.

MANUFACTURERS OF WOOD SCREWS, MACHINE SCREWS, TIRE BOLTS, STOVE BOLTS, RIVETS AND BURRS, WIRE NAILS AND KINDRED ARTICLES IN ALL VARIETIES OF MATERIAL FORM AND FINISH, BOTH REGULAR AND SPECIAL.



Cap Screws.



Knob Screws.



Belt Rivets.



Burrs.



Tinners' Rivets.



Hame Rivets.



PROVIDENCE, R. I., U. S. A.





The Freezer

A Woman

Wants

is the Freezer to sell. The Freezer every dealer wants is the Freezer every woman wants, because it is the easiest Freezer to sell.

The White Mountain Freezer

is the favorite because it is the best; it is the best because it will produce better results more economically, with less labor and in less time than any other freezer.

When you consider that more jobbers and retailers sell more White Mountain Freezers than all other freezers combined, doesn't it seem as if the stamp of public approval had been placed on the White Mountain?

There is money, satisfaction and permanent prosperity in selling White Mountain Freezers because they are the standard of the world.

Send for our Catalog

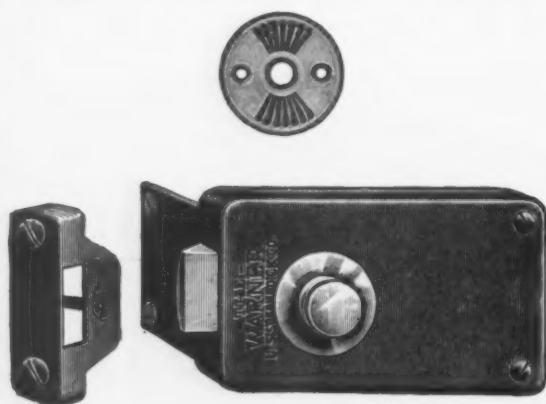
The White Mountain Freezer Co.,
NASHUA, N. H.

New Improved Night Latch.

No. 200 SERIES.

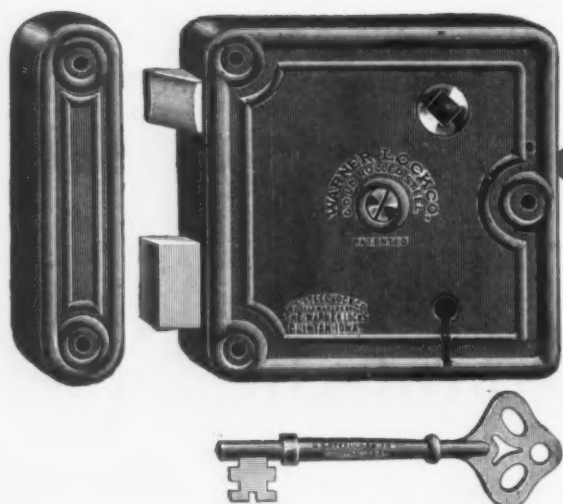
Several radical improvements have been made in this popular latch. It is now provided with a three-quarter inch brass tube containing the key mechanism, thus permitting the use of a shorter key without curtailing the thickness of the door for which it is applicable and which makes the key more convenient to carry in the pocket.

The case is not folded together as in some instances, but is drawn out of a solid sheet of steel with lip for screws extending below the latch bolt, thus doing away with the old complaint of the screw holes through the case coming too near the edge of the door.



CUT HALF SIZE.

No.	Finish	Bolt.	Two Keys No. 52.	Knob.	Escutcheon.
200	Ivory Japan.	Bronze.	Nickel Plat'd	Nickel Plated.	Bright Bronze.
201	Nickel Plat'd	Bronze.	Nickel Plat'd.	Nickel Plated.	Nickel Plated.
202	Copper Pl't'd	Bronze.	Nickel Plat'd.	Nickel Plated.	Old Copper.



The "Warner" Iron Bolt Rim Knob Lock.

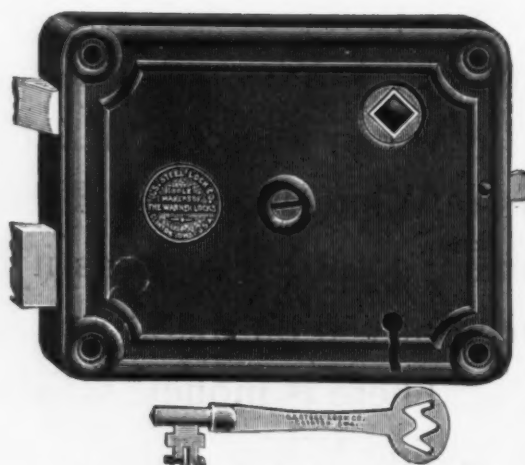
LOCKS COMPLETE.

No. 1899—Iron Bolts and Malleable Iron Keys.

No. 1899 1/2—Iron Bolts and Steel Keys.

New Horizontal Rim Lock.

- No. 1155—Japanned Ivory Finish, 1 Tumbler.
- No. 1155 1/3—Japanned Ivory Finish, 3 Tumblers.
- No. 1155C—Old Copper Finish, 1 Tumbler.
- No. 1155 1/3 C—Old Copper Finish, 3 Tumblers.
- No. 1199—Iron Bolts and Hub, Malleable Key.
- No. 1199 1/2—Iron Bolts and Hub, Steel Key.



No. 1155. HORIZONTAL RIM LOCK.

Prices and Discount Given on Application.

UNITED STATES STEEL LOCK COMPANY,
CLINTON, IOWA.



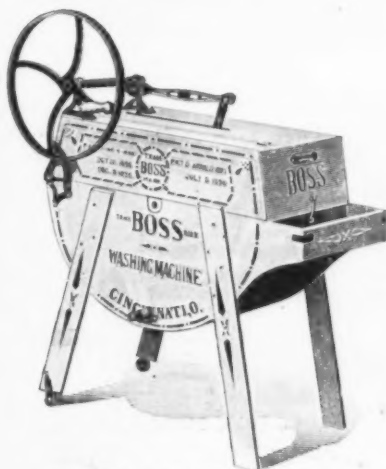
BOSS WASHING MACHINE CO.

P. O. Station H, CINCINNATI, OHIO.

Office and Works, NORWOOD, OHIO.

MANUFACTURERS OF

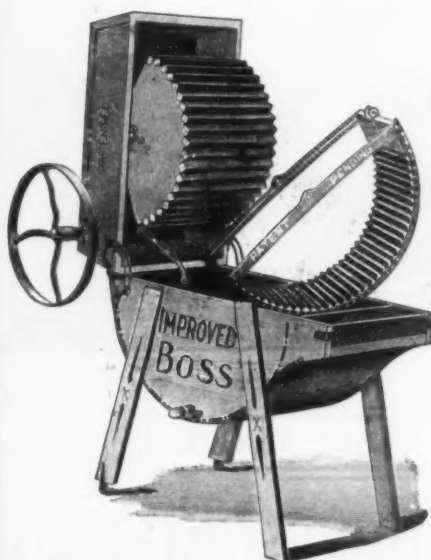
**THE BOSS
AND NEW
STANDARD
CHAMPION
WASHERS**



THE BOSS WASHER, CLOSED.



THE NEW STANDARD CHAMPION, CLOSED.



THE BOSS STEEL FRAME CYLINDER, OPEN.

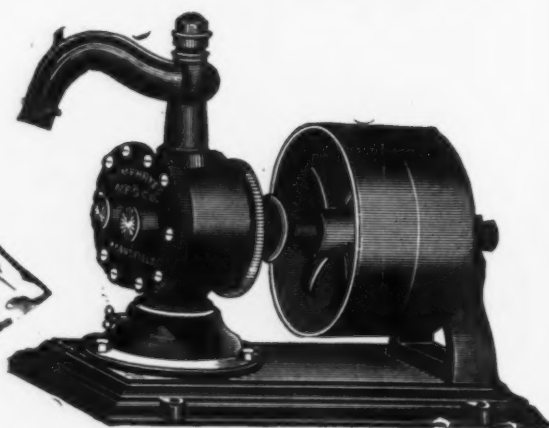
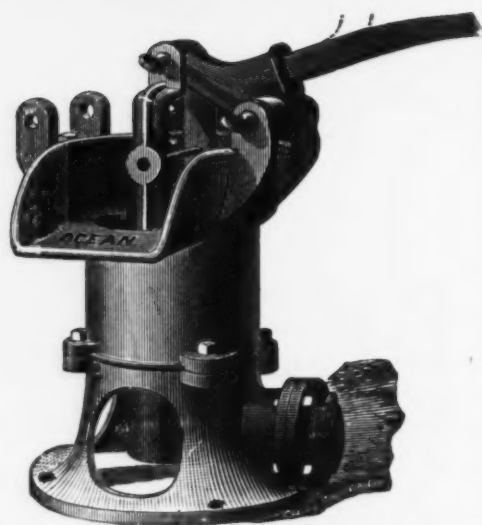
OUR NEW 1901
CATALOGUE,
SHOWING A
COMPLETE
LINE LATEST
PATTERN AND
DESIGN IN
WASHERS, IS
NOW READY.

SHALL WE
SEND YOU
ONE?



THE NEW STANDARD CHAMPION, OPEN.

PUMPS



CISTERN,
FITCHER,
WINDMILL,
D. A. FORCE,
SET, LENGTH,
HORIZONTAL,
ANTI-FREEZING
PUMPS,
HYDRAULIC RAMS

WE ALSO MAKE

CAST IRON SINKS,
GARDEN AND FIRE
ENGINES,
IRON AND BRASS
PUMP CYLINDERS,
DOUBLE ACTING
PUMPS.

THE HUMPHRYES MFG. CO.,
Mansfield, Ohio.



One Motion

All you need; and if properly applied is more effective than many.

The Peerless Iceland Freezer has one motion and is so constructed that it gives the cream more motion than does any other freezer.

That's why it makes better cream in less time.

Our catalog is causing much favorable comment. Have you seen it?

DANA & CO., = Cincinnati.

New York Branch, 10 Warren St.

San Francisco Branch, 105 Front St.

"STAR" WIND MILLS

Manufactured in All Sizes, 4 to 26 Feet in Diameter,
Galvanized Steel or Wood,

WITH BALL BEARINGS.

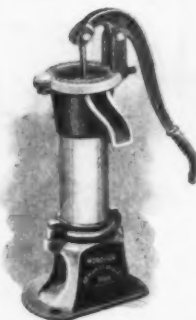
Either Back-Geared or Direct Stroke. Adapted for
Farm, Residence, Power, Railroad or Irrigating Pur-
poses.



Suburban Outfit.

Galvanized Steel Towers

Any Height, Either 3 or 4 Post, with Substantial
Ladder.



Pitcher Spout Pump, with
Brass Cylinder.

The GALVANIZED STEEL "STAR" POWER MILLS

Will Saw Wood, Shell Corn, Grind Feed, Pump Water and Run Machinery of various kinds.

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Largest
Wind
Mill
Factory
in the
World.



Finest
Equip-
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Operated
Exclu-
sively by
Electricity

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FACTORY, KENDALLVILLE, IND., U. S. A.

**BELL TOWERS.
FLAG TOWERS.**

**OUR SPECIALTY:
GALVANIZED STEEL SUBSTRUCTURE WORK**

of any height, capable of supporting any size Tank desired
for Village or City Water Works.

**"HOOSIER"
TANK HEATERS.**



Municipal Plant.

"HOOSIER" and
"FAST MAIL"

**Iron...
Pumps and
Cylinders**

**TUBULAR WELL TOOLS,
MACHINERY and SUPPLIES.**

Valves, Tubular Well
Points, Drive Well
Points, Working Barrels.
Brass Goods, Pipe and
Fittings, Hydrants and
Street Washers, Hose,
and all kinds of Water
Supply Goods.



"Star" Power Mill.

TANKS

Any Capacity.

Any Purpose.

Made of Pine, Cypress, Fir or Galvanized Steel.



Force Pump, with Brass
Bibb Cock in Spout.

FREE Our handsomely Illustrated
Booklet in either English,
German, French or Spanish.

Estimates and Advice Furnished on Application as to the Erection of any Wind Mill Work or Steel Substructures.

Inquiries are respectfully solicited.

Write for catalogue and discounts.

Mention this paper.

FLINT & WALLING MFG. CO., - Kendallville, Indiana.

AGENCIES—Flint & Walling Mfg. Co., Columbus, O.; Flint & Walling Mfg. Co., 591 Bourse Bldg., Philadelphia, Pa.; Iowa Wind Mill and Pump Co., Cedar Rapids Ia.; W. B. Young Supply Co., Kansas City, Mo.; La Crosse Plumbing Supply Co., La Crosse, Wis.; C. K. Turner, 76 Broad St., New York City; Pacific Pump and Wind Mill Co., San Francisco, Cal.; T. M. Brown & Co., Fort Worth, Texas.

Ice Cream Freezers.

THE MOST POPULAR LINES AND MOST COMPLETE ASSORTMENT OF STYLES AND SIZES,
TO MEET EVERY POSSIBLE REQUIREMENT OF TRADE.



"LIGHTNING."

1, 2, 3, 4, 6, 8, 10, 12, 14 Qts.



"GEM."

1, 2, 3, 4, 6, 8, 10, 12, 14 Qts.



"BLIZZARD."

1, 2, 3, 4, 6, 8, 10, 12, 14 Qts.



"JUMBO LIGHTNING."

With Crank, 20 Qts.
" Fly Wheel, 14, 20 Qts.
" Pulley, 14, 20 Qts.

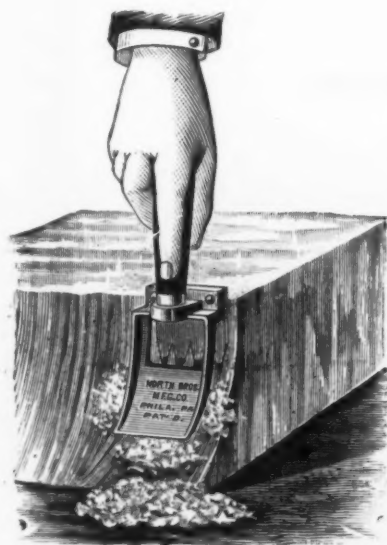


"DOUBLE ACTION CROWN."

With Crank, 8, 10, 14, 18, 24 Qts.
" Fly Wheel, 8, 10, 14, 18, 24, 32 Qts.
" Pulley, 14, 18, 24, 32 Qts.



IMPROVED PHILADA. SEAMAN.
POWER OR HAND.
STEEL OR COPPER CAN.
40 Qts.



**CROWN
ICE CHIPPER.**

To chip ice in small pieces for use in freezers in place of old time bag and hatchet.

**GEM
ICE SHAVE.**

To shave ice for cooling fruits, oysters, wine, summer drinks, making snow balls.

SOLD BY

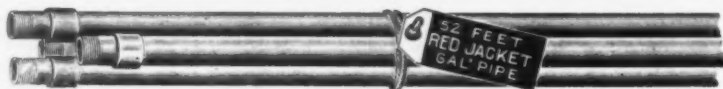
LEADING JOBBERS.

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NORTH BROS. MFG. CO., - Philadelphia, Pa., U. S. A.

New York Agents: JOHN H. GRAHAM & CO., 113 Chambers St.

RED JACKET.



RED JACKET.

RED JACKET

PUMPS, PIPE,

HAY TOOLS,

AND

OTHER SPECIALTIES.

RED JACKET STEEL GALVANIZED PIPE

1901.

FORCE PUMPS
LIFT PUMPS
PITCHER PUMPS
SPRAY PUMPS
TANK PUMPS
TUBULAR PUMPS
CYLINDERS
FLOAT VALVES, ETC.
A FULL LINE OF
FITTINGS. VALVES
AND SUPPLIES
ALWAYS ON HAND.



HOUSE FORCE PUMP.

1901.

HAY CARRIERS
STEEL TRACK
WOOD TRACK
HANGERS
BRACKETS
HAY FORKS
WAGON SLINGS
PULLEYS, ETC.
THE BEST LINE
OF HAY TOOLS MADE.
PROMPT SHIPMENTS
OF ALL ORDERS.

RED JACKET STEEL GALVANIZED PIPE

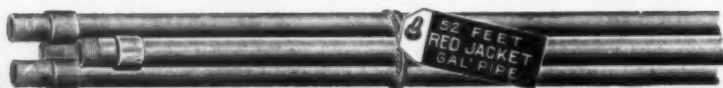
SECURE EXCLUSIVE AGENCY NOW.

CATALOGUE No. 26

MAILED TO ALL DEALERS INTERESTED.**RED JACKET MFG. CO.,**

DAVENPORT, IOWA, U. S. A.

RED JACKET.



RED JACKET.

Wouldn't That Freeze for You?



CHILD'S PLAY.

We make also the Queen Toy (Pint) Freezer.

The QUEEN Freezers

(Patented April 10, 1900.)



TRIPLE MOTION.—With Crank.



TRIPLE MOTION.—With Fly Wheel.

New and Improved
TRIPLE MOTION.

Self Adjusting
Full Size.

We have succeeded to an unusual degree in combining in the Queen Freezer all the requisites for an absolutely first-class freezer.

How Do We Know? The Users Say So.

First.—The time of freezing is less than in any other freezer made— $1\frac{1}{2}$ to 3 minutes for uniform hardness.

Second.—Ease of operation—a child can hold and turn it from first to last, and the finish is scarcely harder than the start, because the "Queen" is built on correct mechanical principles.

Third—Simplicity and ready assembling of parts. The several pieces—the hood, dasher, etc.—are self-adjusting, and unfailingly fall quickly into place by a short turn of the crank.

Fourth.—Dealers who buy "Queens" always sell them and instead of carrying over large stocks for the next season they are quite sure to send us repeated orders. Why is this?

THE SAM'L C. TATUM CO.,

264 Water St.,

CINCINNATI, OHIO.



FIGURE 331.

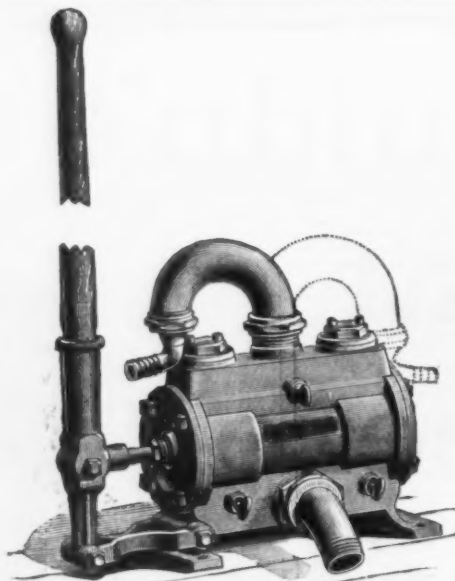


FIGURE 828.

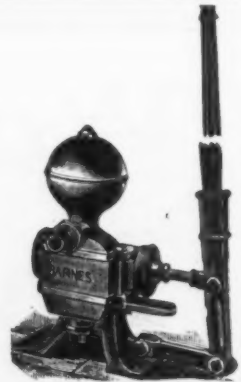


FIGURE 832.

INCREASE YOUR PROFITS



FIGURE 150

and decrease your selling expense—in short, if you proceed in the right way, you can greatly and surprisingly increase the money-making possibilities of your business.

You can accomplish exactly what thousands of other good dealers have actually accomplished by selling

PUMPS.

All Kinds, Sizes and Shapes.

Hand Pumps, Force Pumps, Pitcher Pumps, Tank Pumps, Wind Mill Pumps, Spraying Pumps, Factory Pumps.

ALL HIGH GRADE.

CAST IRON PAINTED AND WHITE ENAMELED SINKS.

SEND FOR CATALOGUE.

THE BARNES MFG. CO., Mansfield, O.

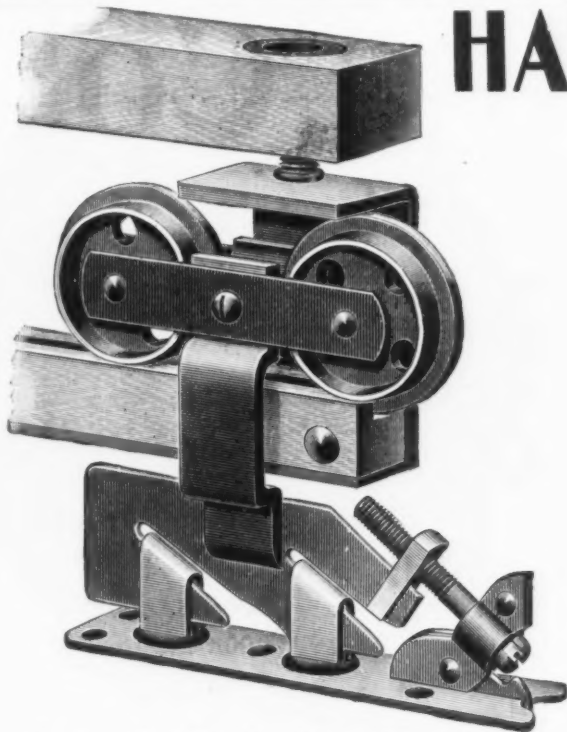


FIGURE 211.

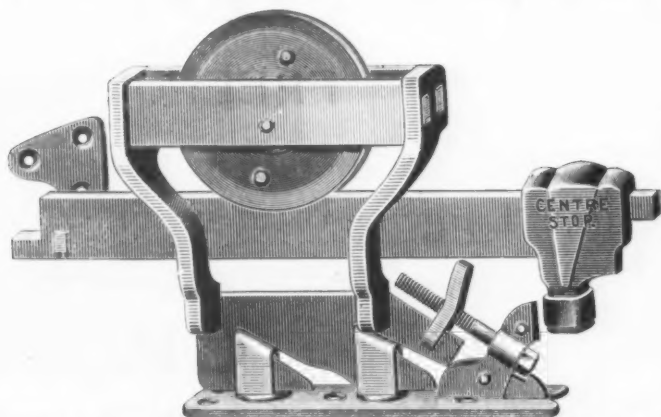


FIGURE 543.

HAPPY NEW YEAR.



Le Roy Ball Bearing House Door Hanger.



Wilcox New Cycle Ball Bearing House Door Hanger.

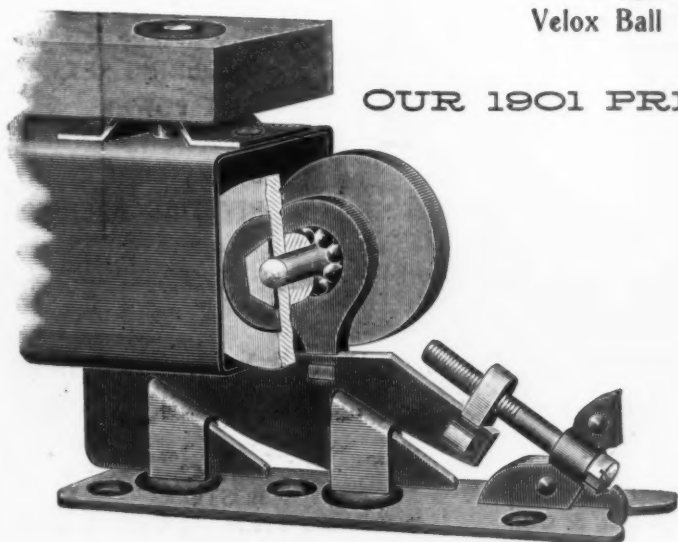
WE
MAKE
OTHERS,
TOO.



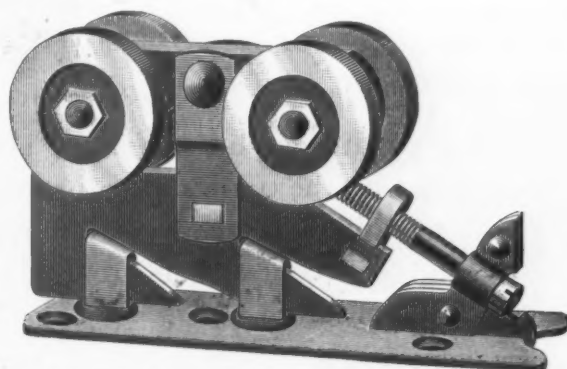
Velox Ball Bearing.

We Open
the Doors
for the
20th
Century
on
Ball
Bearings.

OUR 1901 PRICES ARE READY.



Wilcox Trolley Ball Bearing House Door Hanger.



Wilcox Trolley Double Wheel Ball Bearing House Door Hanger.

WILCOX MFG. CO., AURORA, ILL.

ARCADE MFG. CO.,

FREEPORT, ILL., U. S. A.

We lead in the manufacture of high grade Family Coffee Mills. Large assortment, fine finish; quality unsurpassed.

— SATISFACTION GUARANTEED. —

CRYSTAL

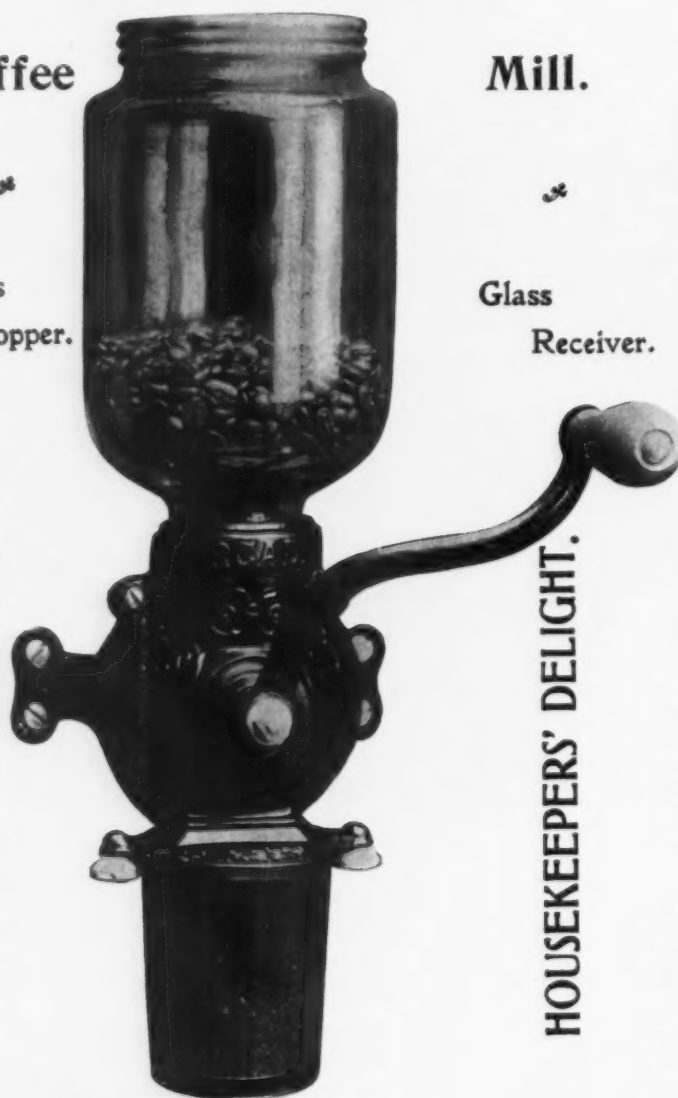
List of Articles We Make,

COFFEE MILLS,
CORK PULLERS,
LEMON SQUEEZERS,
ICE SHAVES,
ICE BOX LATCHES,
ICE PICKS,
MOP HOLDERS,
GARDEN SETS,
MINCING KNIVES,
CAKE TURNERS,
TIMBALE IRONS,
TRACING WHEELS,
CURLING IRONS,
TACK CLAWS,
SPICE BOXES,
SALT BOXES,
KNIFE BOX,
MEDICINE CABINETS,
TOWEL ROLLERS,
PAN and PLATE LIFTER,
RAZOR EDGE,
LAMP BRACKETS,
WIRE STRETCHER,
TOYS,
FOOT SCRAPER,
BOILER HANDLES,
SPRING HINGES,
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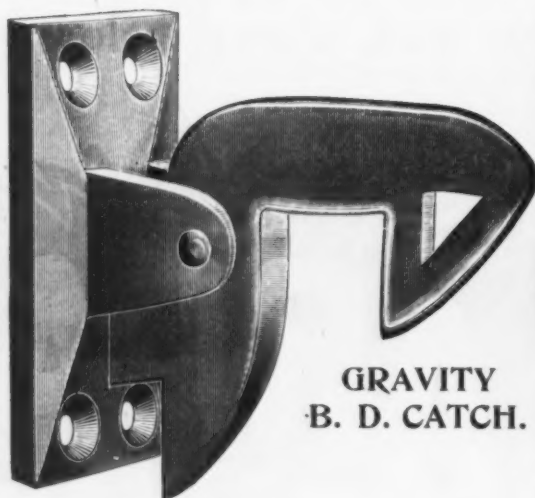
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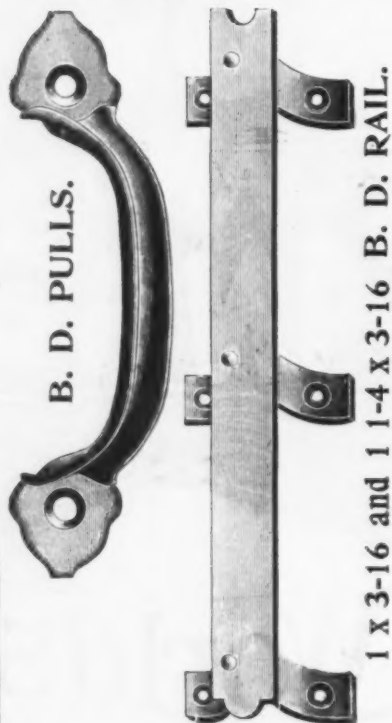


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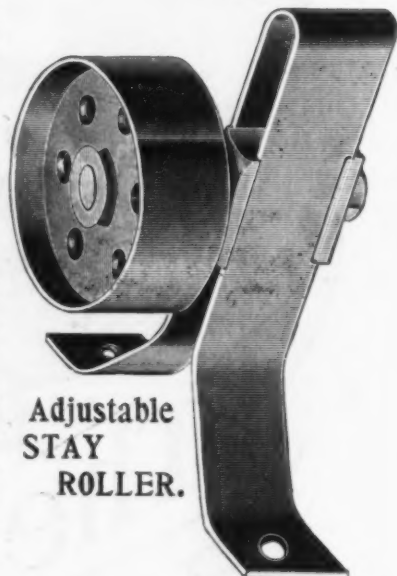
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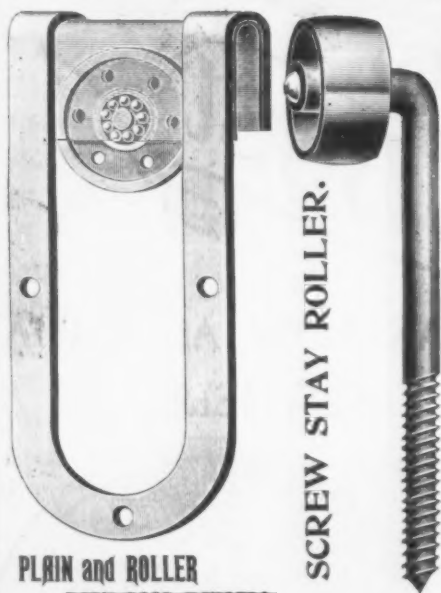


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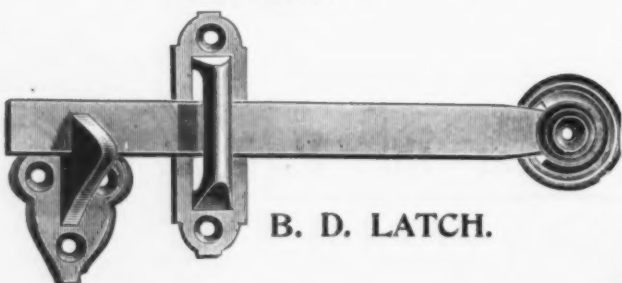


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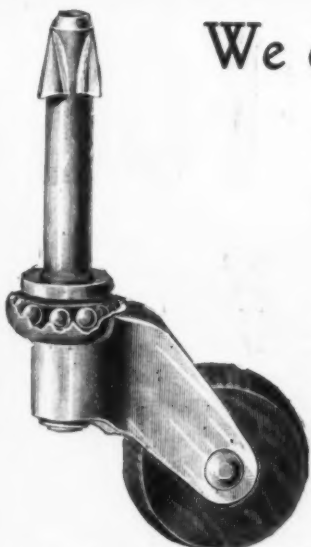
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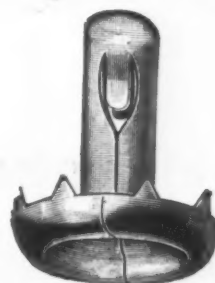
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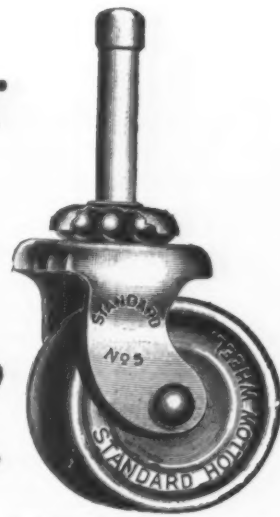
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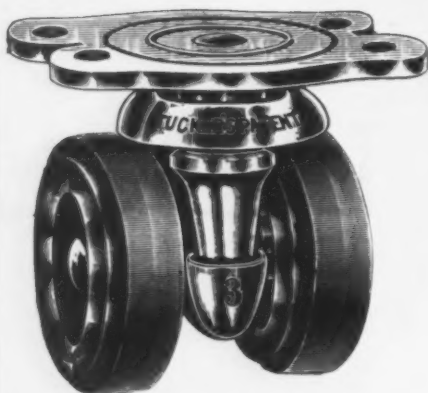


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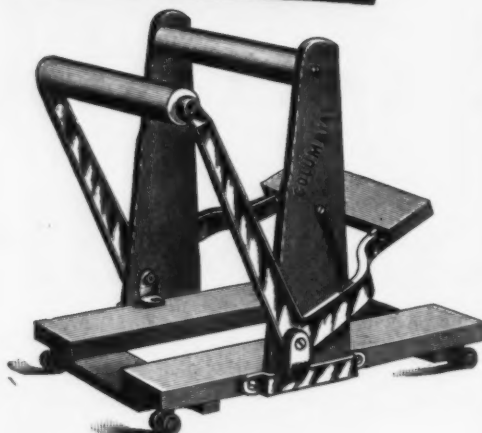


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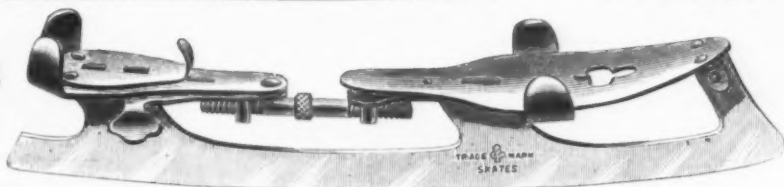
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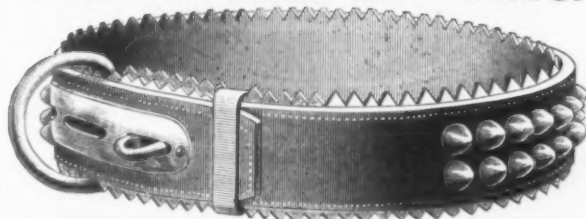
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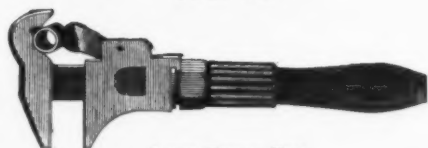
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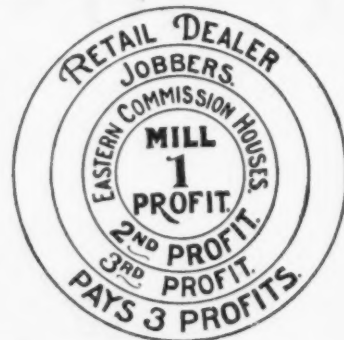
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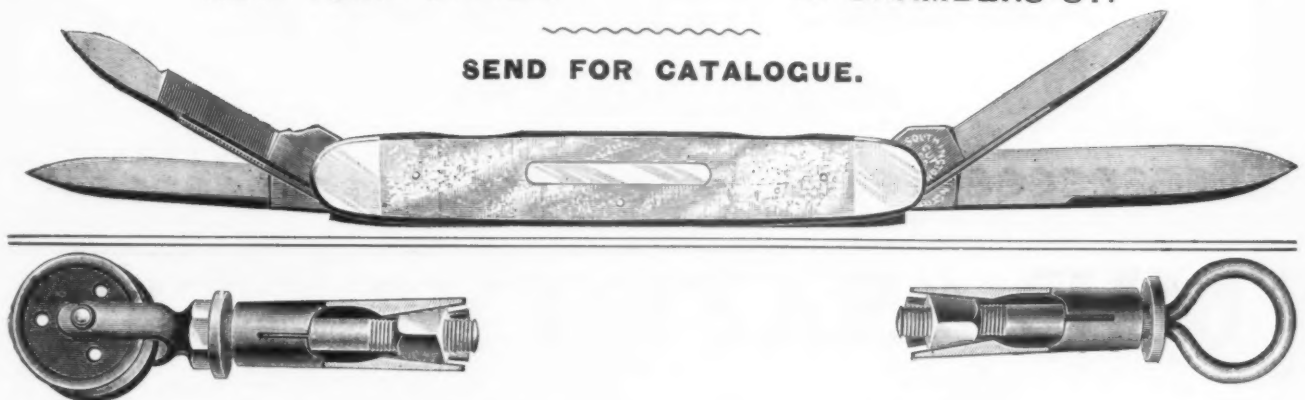
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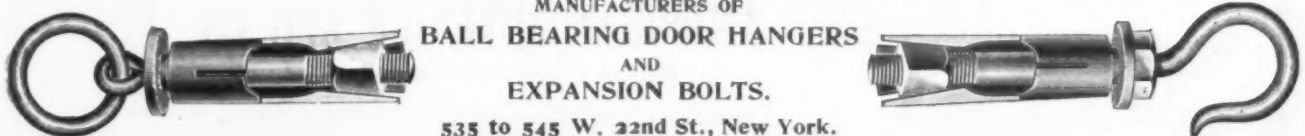
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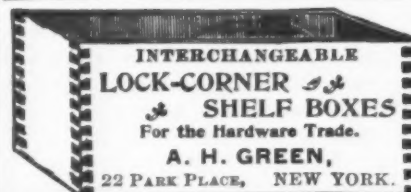
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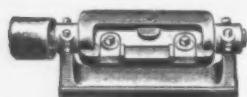
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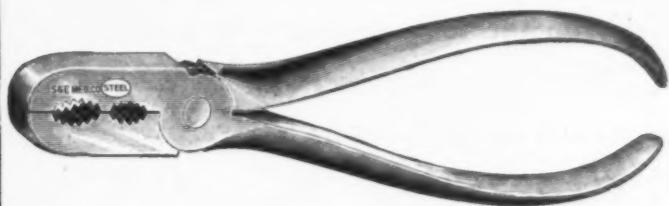
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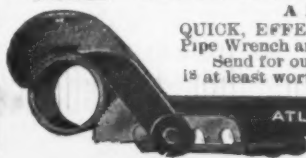
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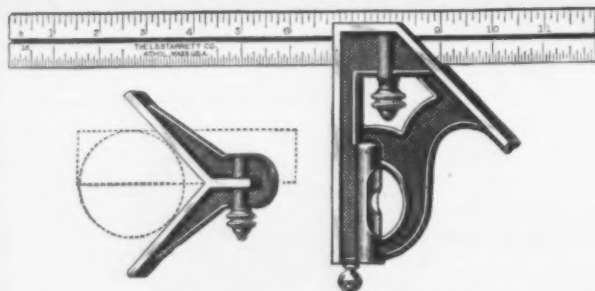
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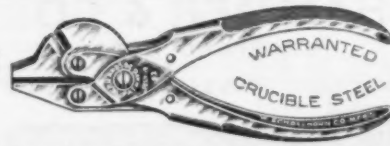
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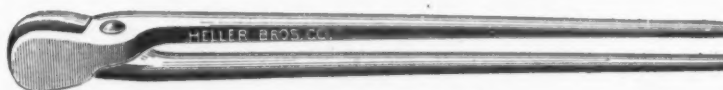
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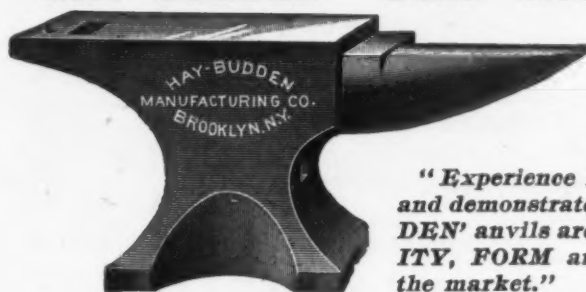


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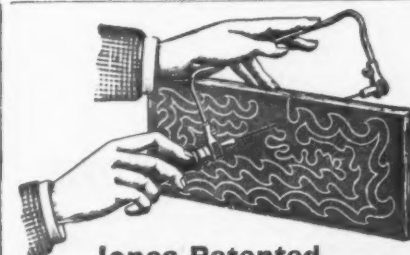
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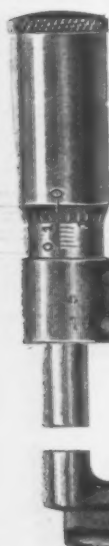
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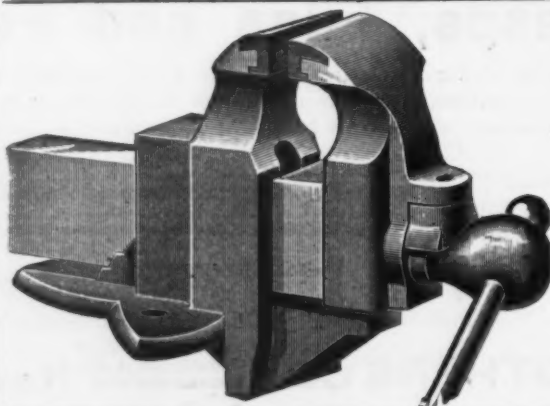
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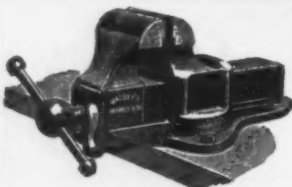


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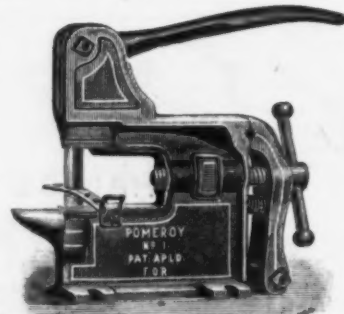
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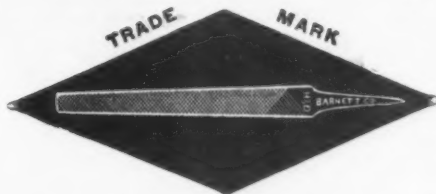
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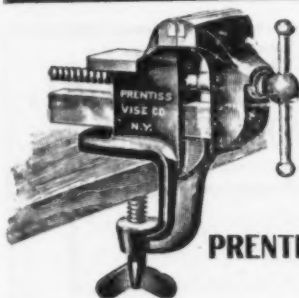


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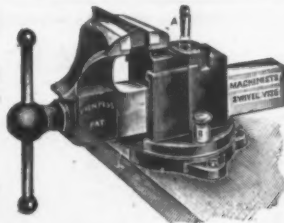
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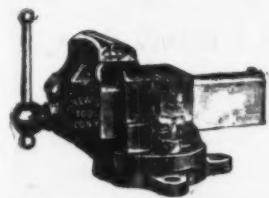
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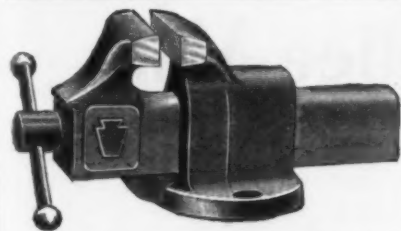
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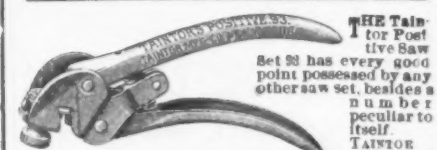
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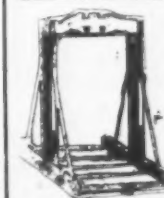
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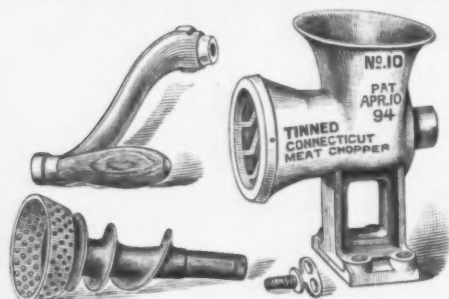
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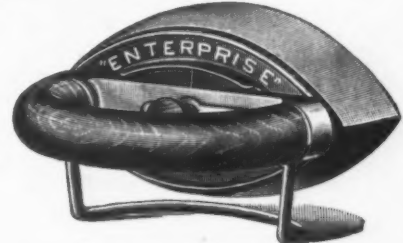
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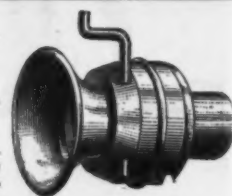
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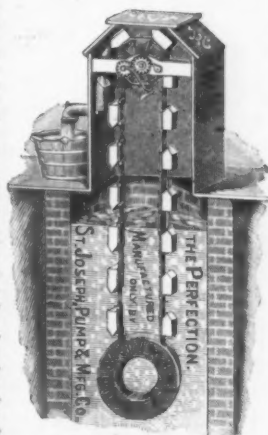
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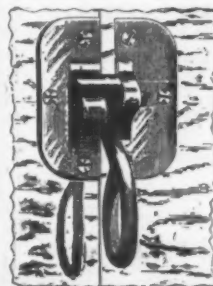
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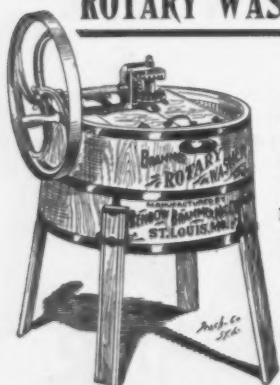
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It is perfectly smooth and seamless inside, with NO CORNERS OR SEAMS TO COLLECT BURNED GREASE. An excellent seller to those who want a GOOD ROASTER.

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We deserve your patronage and good will because our wares are the best for the money and the because we are doing most good for you. We are making the following wares household names and you cannot afford to be without them...this is not sentiment but sound business:

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TRIPLE COATED ENAMELED WARES.

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In seven different styles. Low, medium and high, which for durability, simplicity, economy and convenience, are in all respects the best made.

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Five hours' service of 100
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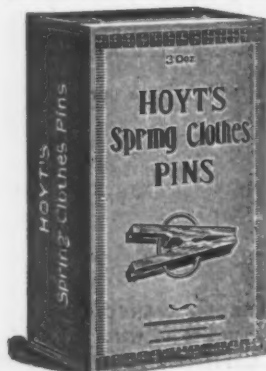
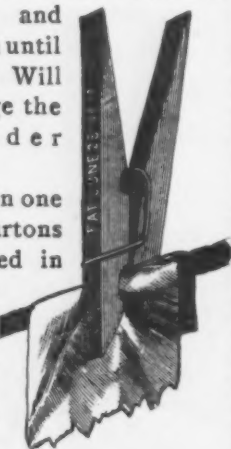
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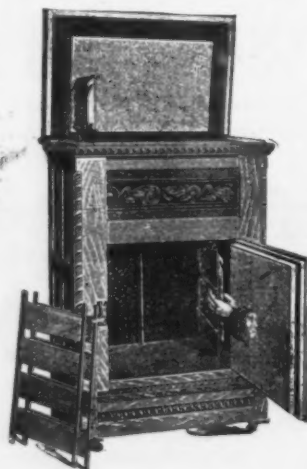
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High Grade Refrigerators of Every Description.



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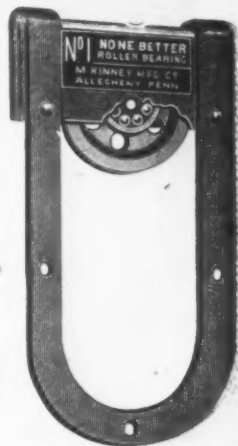
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Solves the Problem HOW TO
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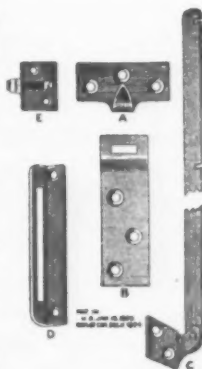
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Storm Windows and Screens are hung or
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The ONLY Check that FULLY controls the Door.

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STEP LADDERS



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They are the
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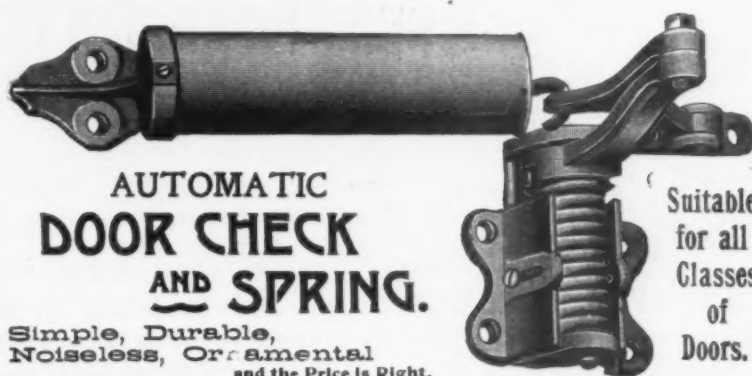
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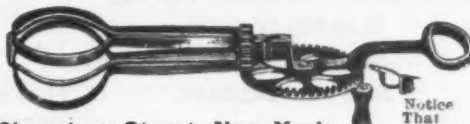


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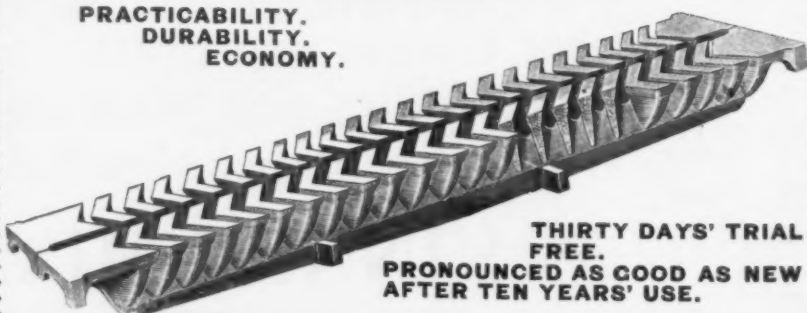
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- No. 2, REGISTERS.
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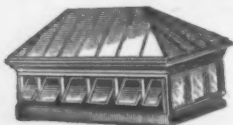
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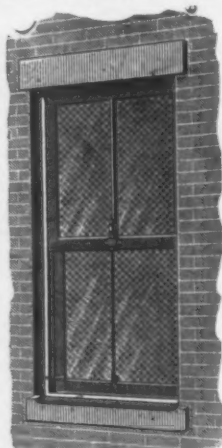
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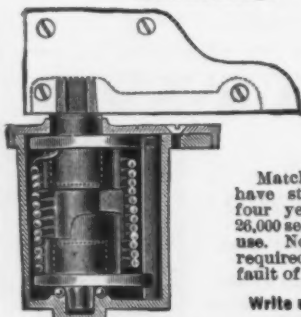
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Double - Acting Floor Hinge.
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have stood the test
four years. Nearly
26,000 sets are now in
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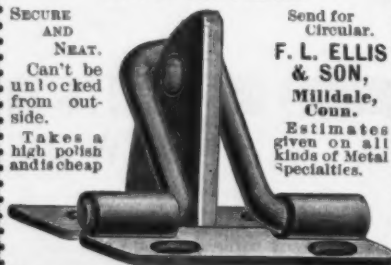
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Made of Sheet Metal.

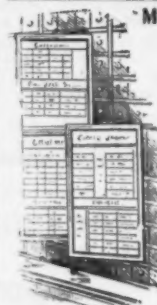
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Takes a
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Patented.

CUTS FULL SIZE.

With these fasteners storm windows can be adjusted in a minute without the use of a screw driver or other tool than a small hammer, doing away with the inconvenience of climbing a ladder. The windows are held in place more securely than in any other way yet invented.

COSTS BUT A TRIFLE. LASTS A LIFETIME.

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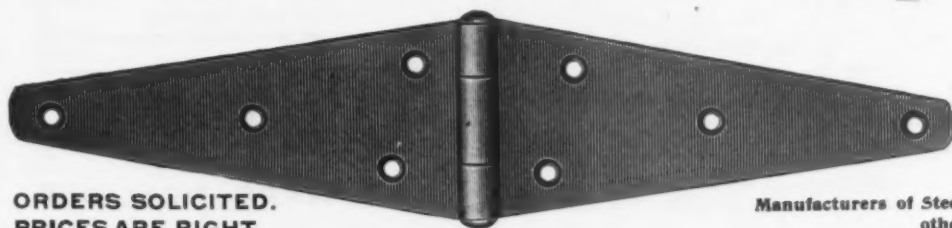
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No. 1706. Inside Fastener.

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— THE — Lawrence Common Strap ^A_D T Hinges

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Goods are made on new dies and guaranteed equal to any on the market. All sizes in stock, and are able to make prompt shipments.

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The line is a most desirable one for the Jobbing trade to handle, as it contains no duplicates, only active goods condensed and in concise form. A line which can be placed in the hands of your salesmen in such a manner as to interest them and enable them, without being experts, to present intelligently to their customers Locks and Builders' Hardware.

The high quality of Norwalk goods is generally known.

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Works:—SOUTH NORWALK, CONN.

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The Walda Sectional Window Weight.



Square and Round Weights Hang exactly from centre. Only 10 inch pockets required. Eliminates use of lead weight.

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with one-sixth the stock required in one piece weights can fill any order. Weight crated with 100 lbs. in a box, both plainly marked.

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saves time, money and delay by balancing windows exactly at once.

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WE are the originators and largest makers of U-shaped hangers. Get the Genuine Lane Hanger for best satisfaction.

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THE ORIGINAL
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Two Styles,
Two Sizes.

LIGHT
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3/4 in. Wheel, for EITHER a FOUR HOLE
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ADAPTED TO ANY ONE'S USE.

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Palmer's Common Sense Frame Pulley.



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Has been the standard for thirty years.

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Every Hank Bears the Above Label.
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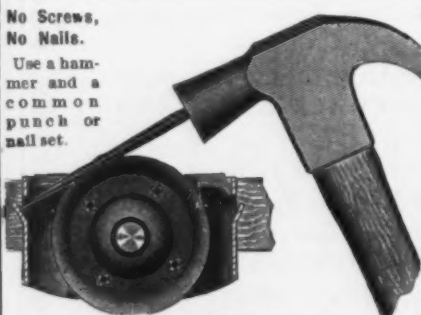


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No Screws,
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Use a ham-
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"Bardsley" Checking Spring Hinge

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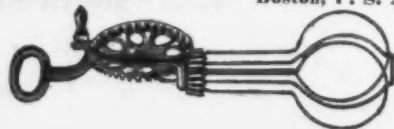
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Also for Marble and Tile
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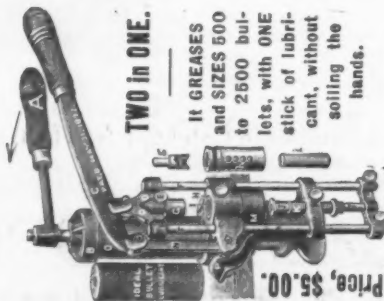
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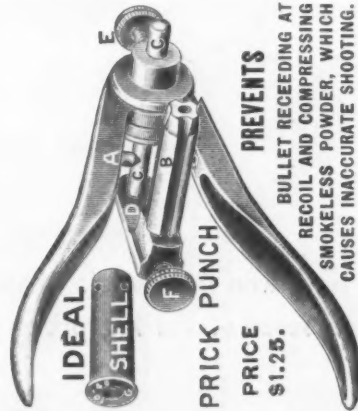
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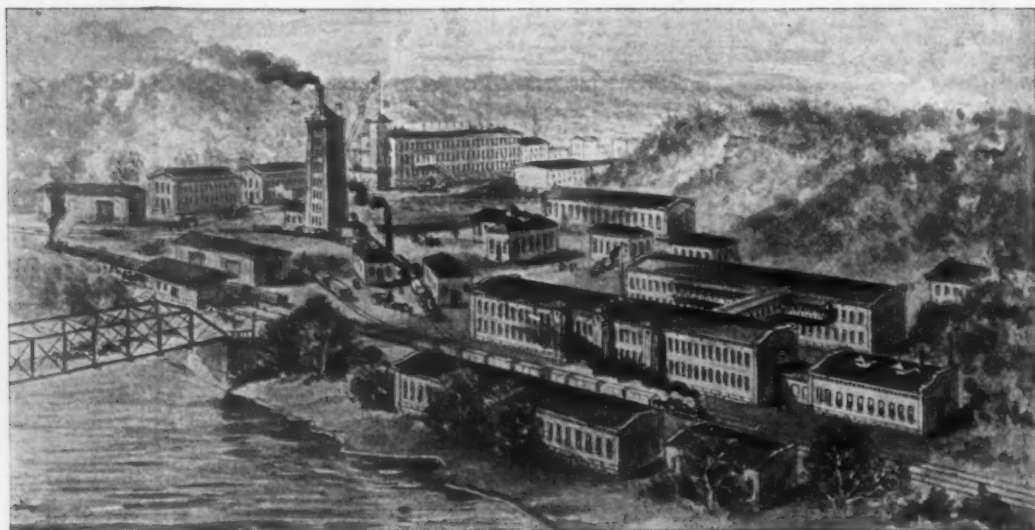
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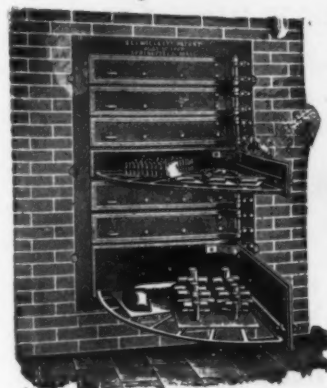
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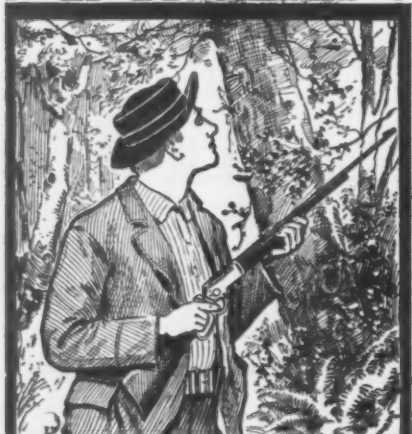
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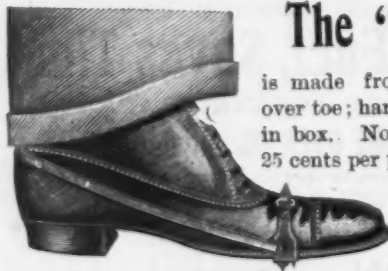
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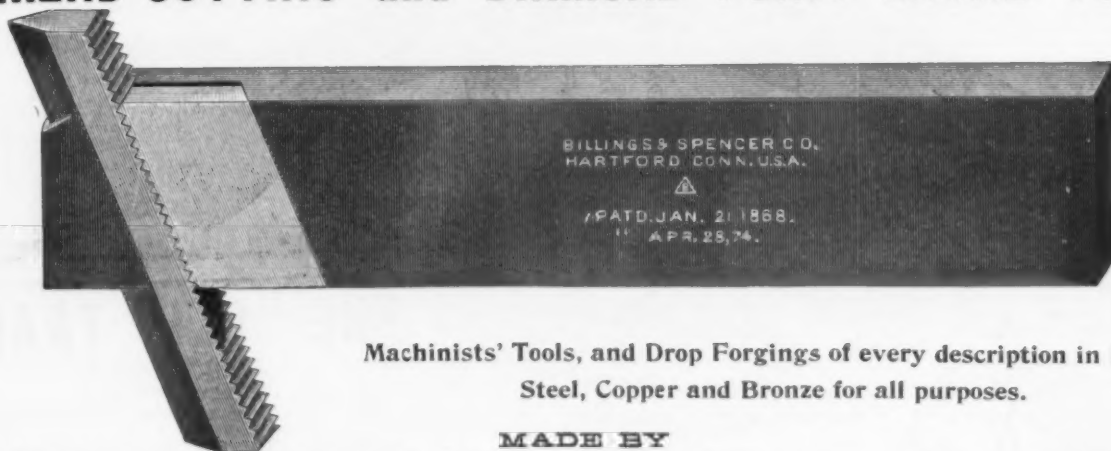
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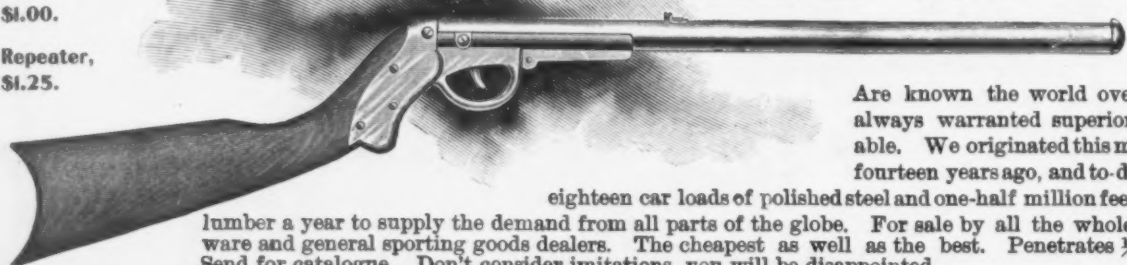
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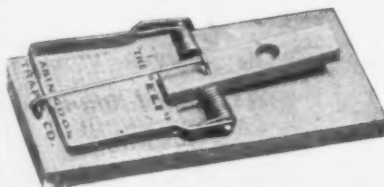
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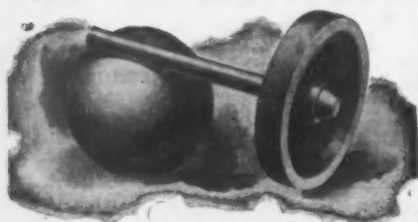
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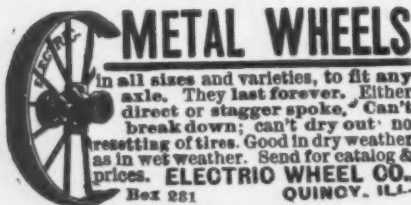
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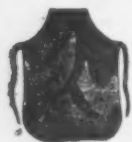
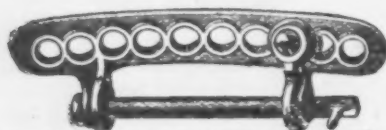
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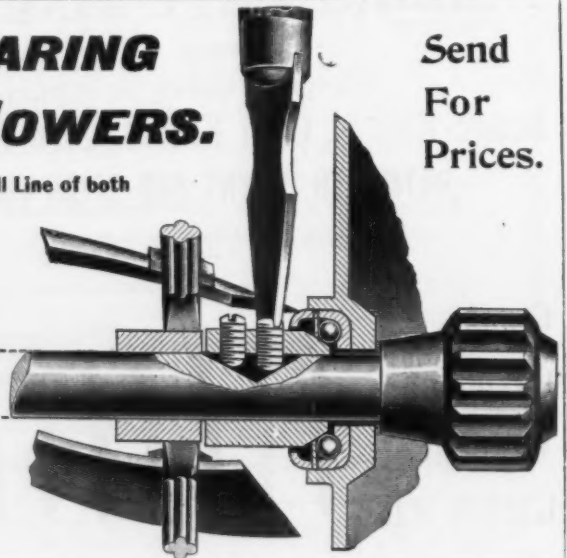
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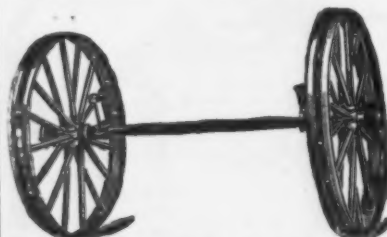
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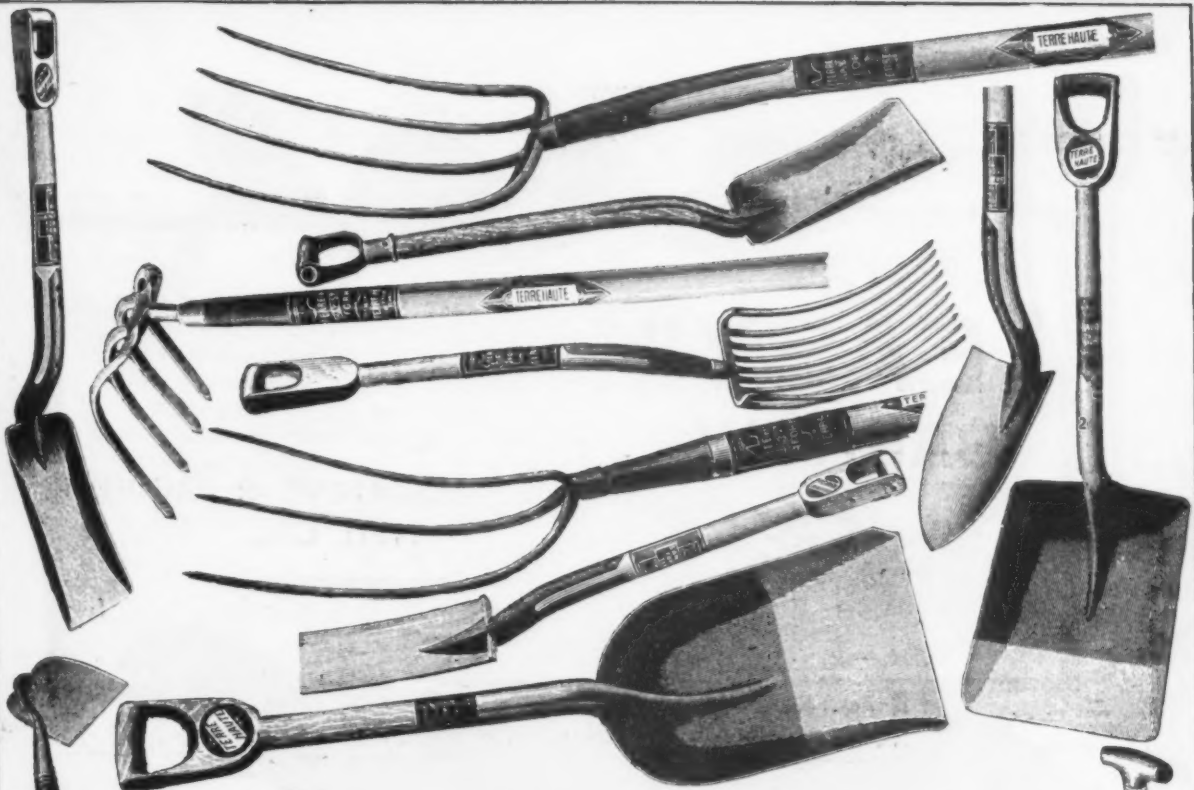
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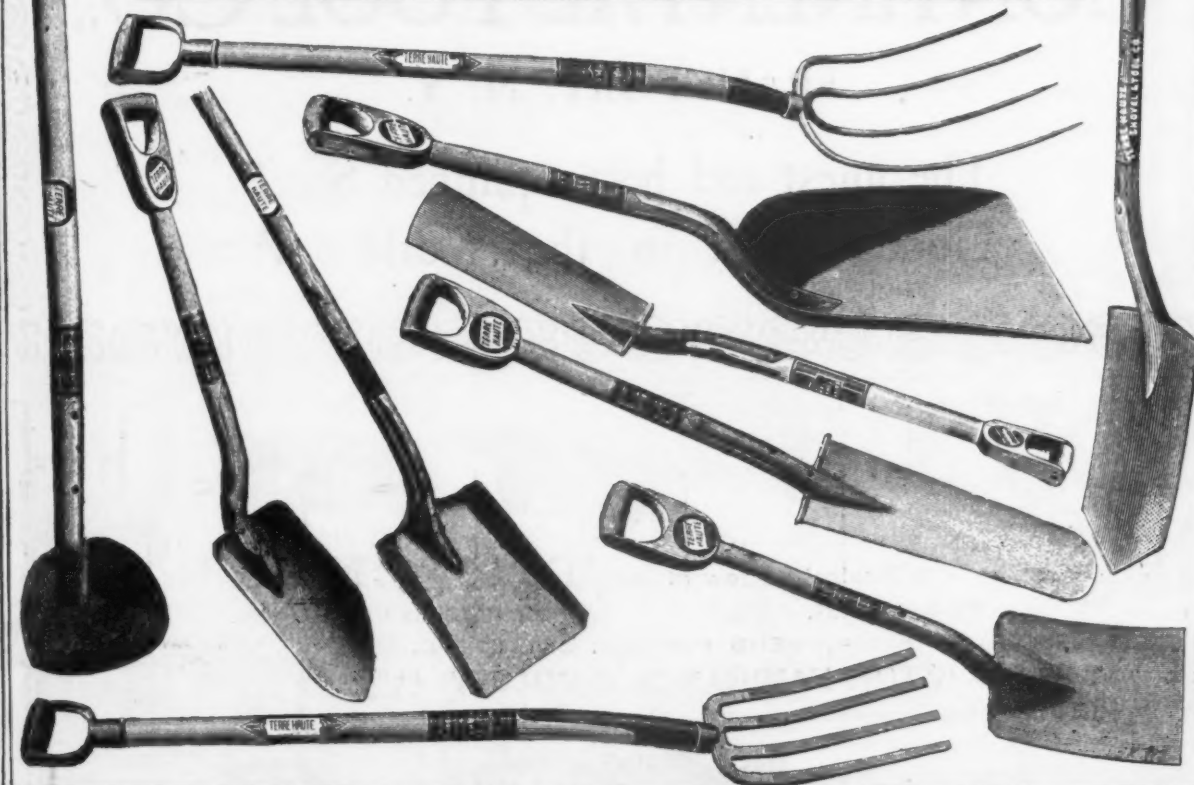
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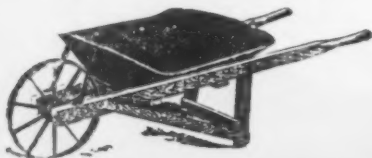
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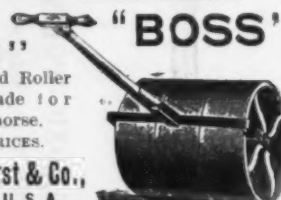
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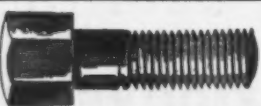
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- Mayhew, H. H. Co., Shelburne Falls, Mass.**
- Turn, Joe T., Phila., Pa.**
- Lower Mfg. Co., Flendale, Mass.**
- owell & Lyon, 95 Chambers St., N. Y.**
- Automatic Machines**
Automatic Mch. Co., Bridgeport, Conn.
Cross & Speirs Machine Co., Waterbury, Conn.
Manville, E. J. Mch. Co., Waterbury, Ct.
Nilson, A. H. Mch. Co., Bridgeport, Ct.
Park City Mfg. Co., Bridgeport, Conn.
Spencer Automatic Mch. Screw Co., Hartford, Conn.
- Awning Hooks**
Wheeling Hinge Co., Wheeling, W. Va.
- Awning Rods**
Grand Chain Co., Rankin, Pa.
- Wedges**
Goodruft, W. W. & Sons, Mt. Carmel, Ct.
- Axles**
Havana Metal Wheel Co., Havana, Ill.
Concord Axle Co., Penacook, N. H.
- Babbitt Metal**
Hertz, T. & Son, St. Louis, Mo.
Magnolia Metal Co., 263-267 West St., N. Y.
Markle Lead Works, St. Louis, Mo.
Reeves, Paul S., Philadelphia, Pa.
Shimer, H. M. & Co., Phila., Pa.
Shonberger, L., 172 Hudson St., N. Y.
Syracuse Smelting Wks., Syracuse, N. Y.
- Bale Ties**
Griswold Wire Co., Braddock, Pa.
Klimmer Wire Mfg. Co., Chicago, Ill.
Wilson, H. P. & H. F., 577-579 Tenth Ave., N. Y.
- Ball Flints**
Nauvauk Mfg. Co., Nauvauk, Conn.
- Bank and Office Railing**
Ester Wire Works Co., 65 Fulton St., N. Y.
- Barb Wire and Fence**
Dillon-Griswold Wire Co., Sterling, Ill.
- Bar Iron**
Allentown Rolling Mill, Allentown, Pa.
American Iron & Steel Mfg. Co., Lebanon, Pa.
American Steel Hoop Co., Battery Park Building, N. Y.
Burden Iron Co., Troy, N. Y.
Champion Iron & Steel Co., Muskegon, Mich.
Consolidated Iron & Steel Co., Bristol, Pa.
Lockhart Iron & Steel Co., Pittsburgh.
- okan Iron & Steel Co., Burnham, Pa.**
- ational Steel Co., Bridgeport, O.**
- Republic Iron & Steel Co., Chicago, Ill.**
- Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.**
- Virginia Iron, Coal & Coke Co., Bristol, Va.—Tenn.**
- Bearings**
Ball Bearing Co., Boston, Mass.
- Heat Topping Knives**
Atkins, E. C. & Co., Indianapolis, Ind.
- Belted**
Scott, Geo. M., Chicago 1.
- Bells and Gongs**
Berin Bros. Mfg. Co., East Hampton, Ct.
Gong Bell Mfg. Co., E. Hampton, Ct.
Hill, N. N. Brass Co., E. Hampton, Ct.
Johnson, Geo. C., Catsaugus, A.
Moesberg, Frank Co., Andover, Mass.
Starr Bros. Bell Co., East Hampton, Ct.
- Belt Dressing**
Dixon, Jos., Crucible Co., Jersey City.
- Belt Hooks**
Angell Belt Hook Co., Providence, R. I.
Bristol Co., Waterbury, Conn.
Talcoit, W. O. Providence, R. I.
- Belt Lacing**
Nair & Co., Cleveland, O.
- Belt Studs**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Belting**
Alexander Bros., 413 N. 8d, Phila., Pa.
Ames Sword Co., Chicopee, Mass.
Boston Belting Co., Boston, Mass.
Machinists' Supply Co., Rochester, N. Y.
Main Belting Co., Phila., Pa.
Peerless Rubber Mfg. Co., 16 Warren St., New York.
Shultz Belting Co., St. Louis, Mo.
- Belt Chain**
Fuhl Malleable Co., Detroit, Mich.
Jeffrey Mfg. Columbus, O.
Link-Belt Engineering Co., Phila., Pa.
- Bending Rolls**
Baker, Jas. H. Mfg. Co., Pittsburgh, Pa.
Betzsch & Co., Cambridge City, Ind.
Hiles & Jones Co., Wilmington, Del.
New Doty Mfg. Co., Janesville, Wis.
Niles Tool Works Co., 135-139 Liberty St., N. Y.
- Bicycles**
Johnson, Iver, Arms & Cycle Works, Fitchburg, Mass.
Remington Arms Co., Ilion, N. Y.
- Bicycle Bells—See Bells and Gongs.**
- Bicycle Chains**
Bridgeport Chain Co., Bridgeport, Ct.
- Bicycle Lamps**
Bridgeport Brass Co., Bridgeport, Conn.
Plume & Atwood Mfg. Co., 29 Murray St., New York.
- Bicycle Machinery**
Bliss, E. W. Co., Brooklyn, N. Y.
Draper Mch. Tool Co., Worcester, Mass.
Garvin Mch. Co., Springfield and Varick Sts., New York.
Pratt & Whitney Co., Hartford, Conn.
- Bicycle Parts**
Armstrong Bros. Tool Co., Chicago.
Davis & Buxton Stamping Co., Worcester, Mass.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Springfield Machine Screw Co., Springfield, Mass.
Standard Tool Co., Cleveland, O.
- Bicycle Sundries**
Levin Bros. Mfg. Co., E. Hampton, Mass.
Bridgeport Gun Implement Co., 313-315 Broadway, N. Y.
- Bills, N. N. Brass Co., E. Hampton, Ct.**
- Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.**
- Smith & Edge Mfg. Co., Bridgeport, Ct.**
- Supply-His. Co., Phila., Pa.**
- Bicycle Wrenches**
Star Mfg. Co., Carpentersville, Ill.
- Blind Twine**
American Mfg. Co., 65 Wall St., N. Y.
- Bird Cages**
Hendryx, Andrew B. Co., New Haven, Conn.
- Bits**
Conn. Valley Mfg. Co., Centerbrook, Ct.
Forest City Bit & Tool Co., Rockford, Ill.
Norton Mfg. Co., Chester, Conn.
Perry, F. H. & Co., Chester, Conn.
- Bit Braces**
Nason & Parker, Winchester, Mass.
- Bits and Braces**
Fray, Jno. S. & Co., Bridgeport, Conn.
- Black Plate**
American Tin Plate Co., N. Y.
Champion Iron & Steel Co., Muskegon, Mich.
- Blankets**
Buckman Co., Cleveland, O.
- Blast Forges**
Miner & Peck Mfg. Co., New Haven, Ct.
- Blocks, Tackle**
Boston & Lockport Block Co., Boston.
Fulton Iron & Eng. Wks., Detroit, Mich.
Lane Bros. Co., Poughkeepsie, N. Y.
Union Hardware Co., Torrington, Ct.
- Blowers**
American Blower Co., Detroit, Mich.
Ash-T. A., 109 Liberty St., N. Y.
Bavley, Wm. & Sons Co., Milwaukee, Wis.
Boston Blower Co., Hyde Park, Mass.
Buffalo Forge Co., Buffalo, N. Y.
Champion Blower & Forge Co., Lancaster, Pa.
Cornell, J. B. & J. M., 26th St. and 11th Ave., New York City.
Exeter Machine Wks., Boston, Mass.
N. Y. Blower Co., Bucyrus, O.
Panworth, H. M., 103 Liberty St., N. Y.
Sturtevant, B. F. Co., Boston, Mass.
Wilbraham Baker Blower Co., Phila., Pa.
- Boat Hardware**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Boiler Makers' Machinery**
Frederick Bros., Worcester, Mass.
- Boiler Plates**
Lukens Iron & Steel Co., Coatesville, Pa.
Seldel & Hastings Co., Wilmington, Del.
- Boiler Tubes**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
McInnes, C. F. & Co., Phila., Pa.
National Tube Co., Pittsburgh, Pa.
- Boiler Tubes, Brass**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Boilers, Steam**
Babcock & Wilcox Co., 30 Cortlandt St.
Caball Sales Dept., Pittsburgh, Pa.
Cater & Hedges Mfg. Co., Chattanooga, Tenn.
Harrison Safety Boiler Wks., Phila., Pa.
Leffel, James & Co., Springfield, O.
Means & Fulton Iron Works, Birmingham, Ala.
Pollock, W. B. Co., Youngstown, O.
Wetherill, Robt. & Co., Chester, Pa.
Whitehead, W. W., Davenport, Iowa.
Wood, Jno. Mfg. Co., Conshohocken, Pa.
- Bolt Cutters**
Brown, H. B. & Co., East Hampton, Ct.
Chambers Bros., Philadelphia, Pa.
Helwig Mfg. Co., St. Paul, Minn.
- Porter, H. K., Boston, Mass.**
- Sellers, Wm. & Co., Inc., Phila., Pa.**
- Bolt and Nut Machinery**
Acme Machinery Co., Cleveland, Ohio.
Ajax Mfg. Co., Cleveland, Ohio.
Detrick & Harvey Mch. Co., Baltimore, Md.
Howard Iron Works, Buffalo, N. Y.
National Machinery Co., Tiffin, Ohio.
Reliance Mch. & Tool Co., Cleveland, O.
Webster & Perks Tool Co., Springfield, Ohio.
- Bolts**
American Iron & Steel Mfg. Co., Lebanon, Pa.
American Screw Co., Providence, R. I.
Plak & Johnson, Waterbury, Conn.
Cincinnati Screw & Tap Co., Cincinnati.
Dunham Nut Co., Unionville, Conn.
Franklin-Moore Co., Winsted, Conn.
Hall's Sam'l Sons, 229 W. 10th St., N. Y.
Haskell, Wm. H. Mfg. Co., Pawtucket, R. I.
Laid, W. C., Bristol, Conn.
McCloud, Crane & Minter Co., Worcester, Mass.
National Elastic Nut Co., Milwaukee, Wis.
Pittsburgh Screw & Bolt Co., Pittsburgh, Pa.
Port Chester Bolt & Nut Co., Port Chester, N. Y.
Rhode Island Tool Co., Providence, R. I.
Rockford Bolt Works, Rockford, Ill.
Russell, Burdall & Ward, Port Chester, N. Y.
Russell & Erwin Mfg. Co., New York.
Shelton Co., Birmingham, Conn.
- Books**
Williams, David Company, 232-238 William-street N. Y.
- Book Heats**
Ben. D. H. & Co., Miamisburg, O.
- Boring and Turning Mills**
Sellers, Wm. & Co., Inc., Phila., Pa.
- Box Mixtures**
Cary Mfg. Co., 19-21 Roosevelt St., N. Y.
- Box Hasps and Hinges**
Cary Mfg. Co., 19-21 Roosevelt St., N. Y.
- Box Screws and Corners**
Cary Mfg. Co., 19-21 Roosevelt St., N. Y.
- Boxes, Hides, Shelf, &c.**
Green, A. H. & Co., 23 Park Place, N. Y.
Jones, Jesse, Paper Box Co., Phila., Pa.
Moore, C. P., Ravenswood, W. Va.
- Brackets, Shelf**
Atlas Mfg. Co., New Haven, Conn.
Griffin Mfg. Co., Allegheny, Pa.
- Brass and Copper**
Ansonia Brass & Copper Co., 99 John St., N. Y.
Bridgeport Brass Co., Bridgeport, Ct.
Davol, John & Sons, 100 John, N. Y.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
Plume & Atwood Mfg. Co., 29 Murray St., N. Y.
Randolph-Cloves Co., Waterbury, Conn.
Rutter, A. T., 236 Broadway, N. Y.
Seaville Mfg. Co., Waterbury, Conn.
Shimer, H. M. & Co., Phila., Pa.
Wentworth Brass Co., 21 Centre St., N. Y.
- Brass and Copper Rods**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Brass and Copper Wire**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Brass Bolt Hinges**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
Tiebout, W. J., 113 Chambers.
- Brass Founders**
Best Mfg. Co., Pittsburgh, Pa.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.
Reed, Paul S., Philadelphia, Pa.
Ryan, J. J. & Co., Chicago, Ill.
- Brass Goods**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Brass and Iron Jack Chains**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
- Breast Drills**
Fray, Jno. S. & Co., Bridgeport, Conn.
- Bridge Builders**
American Bridge Co., 100 R'way, N. Y.
Boston Bridge Works, Boston, Mass.
Eastern Bridge & Structural Co., Worcester, Mass.
Illinois Steel Co., Chicago, Ill.
New England Structural Co., Boston.
Scaife, Wm. B. & Sons, Pittsburgh.
- Bronze Ingots**
Syracuse Smelting Wks., Syracuse, N. Y.
- Bronze, Manganese**
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.
- Bronze, Tobin**
Ansonia Bronze & Copper Co., 99 John St., N. Y.
- Brooms and Brushes**
Osborn Mfg. Co., Cleveland, O.
- Burges**
Kilburne Mfg. Co., Fair Haven, Vt.
- Buffing and Polishing Lathes**
Webster & Perks Tool Co., Springfield, Ohio.
- Buffing Wheels**
Divine Bros. Co., Utica, N. Y.
- Burgies**
Parry Mfg. Co., Indianapolis, Ind.
- Builders' Hardware**
Norwalk Lock Co., So. Norwalk, Conn.
Reading Hardware Co., Reading, Pa.
Russell & Erwin Mfg. Co., New York.
Snyder Bros., New Britain, Conn.
Taylor & Boggs Fdry Co., Cleveland, O.
U. S. Steel Lock Co., Clinton, Iowa.
- Buildozers**
Williams, White & Co., Molina, Ill.
- Bugs-sput**
Middleton & Co., Phila., Pa.
- Burners Acetylene**
Drake Acetylene Apparatus Co., Cleveland, O.
State Line Talc Co., Chattanooga, Tenn.
- Butchers' Saws**
Dison Henry & Sons, Inc., Phila., Pa.
Goodell-Fry Co., Greenfield, Mass.
Jennings, C. F. & Co., 114 Reade St., N. Y.
Miller, F. B. Co., 26 Warren St., N. Y.
- Butchers' Tools**
Chastillon, John & Sons, 85-89 Cliff St.,
- Goodell Co., Antrim, N. H.**
- Hoffman, C. & A., Phila., Pa.**
- Butts and Hinges—See Hinges.**
- Buyers' System**
Folding Paper Box Co., South Bend, Ind.
- Calibers and Dividers**
Starrett, L. S. Co., Athol, Mass.
J. Stevens Arms & Tool Co., Chicopee Falls, Mass.
- Car Building Machinery**
Wood, S. A. Machine Co., So. Boston.
- Car Springs**
Scott, Chas. Spring Co., Phila., Pa.
- Carbide of Silicon**
Carborundum Co., Niagara Falls, N. Y.
- Carborundum Grains**
Carborundum Co., Niagara Falls, N. Y.
- Carborundum Wheels**
Carborundum Co., Niagara Falls, N. Y.
- Card Indexes**
Globe Werricke Co., Cincinnati, O.
- Carriage Robes**
Buckman Co., Cleveland, O.
- Carriage Hardware**
Atlas Bolt & Screw Co., Cleveland, O.
Baker, Jas. H. Mfg. Co., Pittsburgh, Pa.
Clapp, E. D. Mfg. Co., Auburn, N. Y.
Eccles, Richard, Auburn, N. Y.
Scranton Forging Co., Scranton, Pa.
- Carriage and Wagon Springs**
Rowland, Wm. & Harvey, Phila., Pa.
- Cars**
American Engineering Wks., Chicago.
Atlas Bolt & Screw Co., Cleveland, O.
Shelton Car Co., Three Rivers, Mich.
- Cartridges**
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
Peterson Cartridge Co., Cincinnati, O.
Union Metallic Cartridge Co., 313-315 Broadway, N. Y.
- Carving Tools**
Buck, Chas., Millbury, Mass.
- Case Hardening Material**
American Carburizing Co., Jersey City.
- Cash Recorders**
Hough Cash Recorder Co., Indian Orchard, Mass.
Whiting Mfg. Co., Northboro, Mass.
- Casters**
Schenck, M. B. Co., Meriden, Ct.
Standard Caster & Wheel Co., 316-326 E. 23d St., N. Y.
Tucker & Dorsey Mfg. Co., Indianapolis.
- Castings, Atlas Metal**
Ferro-Carbon Castings Co., Phila., Pa.
- Castings, Brass, Bronze and Copper**
Bridgeport Deoxidized Bronze & Metal Co., Bridgeport, Conn.
Chapman, J. B. & Co., Springfield, Mass.
Clark, John W., Albany, N. Y.
Cramp, Wm. & Sons S. & E. B. Co., Philadelphia, Pa.
Noite Brass Co., Springfield, O.
Ryan, J. J. & Co., Chicago, Ill.
West Side Foundry Co., Troy, N. Y.
- Castings, Finished**
Franklin, H. H. Mfg. Co., Syracuse, N. Y.
- Castings, Iron**
Allen, E. R., Corning, N. Y.
Barne & Reed Mfg. Co., Boston, Mass.
Baush Mch. Tool Co., Springfield, Mass.
Birmingham Iron Fdry., Derby, Conn.
Booth, The Lloyd Co., Youngstown, O.
Hayler, Wm. & Sons Co., Milwaukee.
Cheney, S. & Son, Manlius, N. Y.
Chisholm & Moore, 121 o. Cleveland.
Clark, John W., Albany, N. Y.
Coddling Mfg. Co., Bristol, Conn.
Crane, Wm. M. Co., 131 Broadway, N. Y.
Diamond Drill & Mch. Co., Birdsboro, Pa.
Du Bois Iron Works, Du Bois, Pa.
Farrel Fdry & Mch. Co., Ansonia, Ct.
Forest City Foundry & Mfg. Co., Cleveland, Ohio.
Livermore, H. F., Boston, Mass.
Lorain Foundry Co., Lorain, Ohio.
McLain, J. H. Co., Canton, O.
New Albany Mfg. Co., New Albany, Ind.
Norwalk Pattern & Mfg. Co., So. Norwalk, Conn.
Palmer and De Mooy Foundry Co., Cleveland, O.
Phila. Iron & Mch. Co., Philadelphia, Pa.
Sessions Foundry Co., Bristol, Conn.
Spencer's S. Sons, Guilford, Conn.
Standard Fdy. & Mfg. Co., Cleveland, O.
Taylor & Boggs Fdry Co., Cleveland, O.
U. S. Cast Iron Pipe & Foundry Co., Phila., Pa.
Vulcan Foundry & Machine Co., New Castle, Pa.
West Side Foundry Co., Troy, N. Y.
Wetherill, Robert & Co., Chester, Pa.
Wheeling Mold & Fdry. Co., Wheeling, W. Va.
Youngstown Fdry. & Mch. Co., Youngstown, O.
- Castings, Malleable**
Acme Steel and Mail Iron Works, Buffalo, N. Y.
Arcade Mail Iron Co., Worcester, Mass.
Columbia Mail & Gray Iron Castings Co., Columbus, Ohio.
Hammer & Co., Branford, Conn.
Haven Elevator Co., Cincinnati, O.
Haven Malleable Castings Co., Cincinnati, O.
Jarecki Mfg. Co., Erie, Pa.
Norway Iron & Steel Co., York, Pa.
York Mfg. Co., York, Pa.
- Castings, Steel**
Arcade Malleable Iron Co., Worcester.
Bethlehem Steel Co., So. Bethlehem, Pa.
Chester Steel Casting Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Slange, Stanley G. & Co., Phila., Pa.
Lima Steel Castings Co., Lima, O.
Livermore, Homer F., Boston, Mass.
Morris, P. Hollingsworth, Phila., Pa.
New England Steel Castings Co., Philadelphia, Pa.
Ous Steel Co., Ltd., Cleveland, Ohio.
Sargent Co., Chicago.
Shaw, E. M., Providence, R. I.
Union Steel Casting Co., Pittsburgh, Pa.
United States Steel Co., Boston, Mass.
- Catalogue Files**
Folding Paper Box Co., South Bend, Ind.
- Ceilings, Metal**
Youngstown Iron & Steel Roofing Co., Youngstown, O.
- Cement**
Lawrence Cement Co., 1 Broadway, N. Y.

Cements, Iron

Smooth On Mfg. Co., Jersey City, N. J.

Chairs

Bradlee & Co., Philadelphia.

Bridgeport Chain Co., Bridgeport, Ct.

Hungerford, U. T., Brass & Copper Co., 121 Worth St., N. Y.

Jenkins Iron & Tool Co., Howard, Pa.

Link-Belt Engineering Co., Phila., Pa.

McKay Jas. & Co., Pittsburgh, Pa.

Onida Community, Ltd., Niagara Falls

Standard Chain Co., Pittsburgh, Pa.

Chain Plants

Turner, Vaughn & Taylor Co., Cuyahoga Falls, O.

Chemicals

Kimber & Amend, New York.

Cherry Stoppers

Enterprise Mfg. Co., Philadelphia, Pa.

Chisels

Buck Bros., Millbury, Mass.

Buck, Chas., Millbury, Mass.

Jennings, C. B. Co., 101 Rensselaer St., N. Y.

White, L. & Co., Buffalo, N. Y.

Christmas Tree Holders

Logan & Strobbridge Iron Co., New Brighton, Pa.

North Bros. Mfg. Co., Philadelphia, Pa.

Chucks

Cushman Chuck Co., Hartford, Conn.

Doehler Mfg. Co., Middletown, Conn.

Goodell Pratt Co., Greenfield, Mass.

Hoggonson & Pettis Mfg. Co., New Haven, Conn.

Holland Mfg. Co., Erie, Pa.

Horton, E. & Son Co., Windsor Locks, Ct.

Ideal Machine Works, Hartford, Conn.

Frank Chuck Co., Frankfort, N. Y.

Skinner Chuck Co., New Britain, Conn.

Standard Tool Co., Cleveland, O.

Union Mfg. Co., 108 Chambers, N. Y.

Whitton, D. E. Mach. Co., New London, Conn.

Circular Sawing Machines

Kiddier, R. E., Worcester, Mass.

Clamps

Besley, C. H. & Co., Chicago, Ill.

Hall, Thos., Brooklyn, N. Y.

Hammer & Co., Bradford, Conn.

Cleaving Rods

Bridgeport Gun Implement Co., 815-815 Broadway, N. Y.

Clevis

Kraus Kross Klevis Co., Higginsville, Mo.

Clipping Machines

Aber Shear & Mfg. Co., Nashua, N. H.

Chicago Flexible Shaft Co., Chicago, Ill.

McCoy, Jos. F. Co., 26 Warren St., N. Y.

Webbush & Hilger, Ltd., 9-15 Murray St., N. Y.

Clocks, Gold Plated

Benedict, M. S. Mfg. Co., E. Syracuse.

Clothes Dryers

Hill Dryer Co., Worcester, Mass.

Clothes Line Hooks

Wilson, E. H. & Co., Allston, Mass.

Clothes Pins

Clark, J. E. Co., Minneapolis, Minn.

U. S. Clothes Pin Co., Montpelier, Vt.

Coal

Alabama Consolidated Coal & Iron Co., Birmingham, Ala.

Sloss Sheffield Steel & Iron Co., Birmingham, Ala.

Washington Coal & Coke Co., Dawson, Pa.

Wister, Francis, Philadelphia, Pa.

Coal Picks

Jenkins Iron & Tool Co., Howard, Pa.

Conaster Boxes

Graham, John H. & Co., 113 Chambers St., N. Y.

Coffee and Spice Mills

Arcade Mfg. Co., Freeport, Ill.

Parker, Chas. Co., Meriden, Conn.

Coke

Alabama Consolidated Coal & Iron Co., Birmingham, Ala.

Besemer Coke Co., Pittsburgh, Pa.

Cherry Valley Iron Co., Pittsburgh, Pa.

Dimmick, J. K. & Co., Phila., Pa.

Frick, H. C. & Co., Phila., Pa.

Houston, C. B. & Co., Philadelphia, Pa.

Rogers, Brown & Co., Cincinnati, O.

Sloss Sheffield Steel & Iron Co., Birmingham, Ala.

Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.

Virginia Iron, Coal & Coke Co., Bristol, Va., Tenn.

Washington Coal & Coke Co., Dawson, Pa.

Wister, Francis, Philadelphia, Pa.

Corrugated Iron and Steel

Garry Iron & Steel Roofing Co., Cleveland, O.

McCullough Iron Co., Wilmington, Del.

Scott, Wm. B. & Sons, Pittsburgh.

Cotton P. Machines, Automatic

Shuster, F. B. Co., New Haven, Conn.

Cotton Ties

American Steel Hoop Co., Battery Park Building, N. Y.

Counting Machines

Durant, W. N., Milwaukee, Wis.

Hart, R. A., Battle Creek, Mich.

Couplings, Compression

Sennett, Geo. B. Co., Youngstown, O.

Cow Ties

Onida Community, Ltd., Niagara Falls, Pa.

Crane

Brown Holsting Machinery Co., Inc., Cleveland, Ohio.

Chisholm & Moore Mfg. Co., Cleveland, Ohio.

Cleveland Crane & Car Co., Cleveland, O.

Niles Tool Works Co., 136-138 Liberty St., N. Y.

Northern Engineering Works, Detroit, Mich.

Pawling & Harnischfeger, Milwaukee, Wis.

Pneumatic Crane Co., Pittsburgh, Pa.

Reading Crane & Hoist Wks., Reading, Pa.

Ridgway, Craig & Son Co., Coatesville, Pa.

Spindel, J. G., Reading, Pa.

Whiting Foundry Equipment Co., Harvey, Ill.

Crayon

Steward, D. M. Mfg. Co., Chattanooga, Tenn.

Crucibles

Dixon, J. A. Crucible Co., Jersey City, N. J.

Cupolas

Northern Engineering Works, Detroit, Mich.

Paxson, J. W. Co., Philadelphia, Pa.

Whiting Foundry Equipment Co., Harvey, Ill.

Curry Combs

Kohler, F. E. & Co., Canton, O.

Cutlery

Cattaraugus Cutlery Co., Little Valley, N. Y.

Chaffin, John & Sons, 85 to 89 Cliff St., N. Y.

Dane, Stoddard & Co., Boston.

Goodell, C., Antrim, N. H.

Kimball, C. J. Co., Bennington, N. H.

Northfield Knife Co., Northfield, Conn.

Parkhurst, L. D., Danielson, Conn.

Southington Cutlery Co., Southington, Conn.

Cutting Off Machines

Hurlbut Rogers Mach. Co., So. Sudbury, Mass.

Cylinders, Air and Gas

Harrisburg Pipe Bending Co., Harrisburg, Pa.

Dampers

Stover Mfg. Co., Freeport, Ill.

Williams, A. C., Ravenna, O.

Dehorers

Brown, H. H. Mfg. Co., Decatur, Ill.

Diamond Tools

Dickinson, Thos. L., 45 Vesey St., N. Y.

Dies

Adrian Mach. Works, Brooklyn, N. Y.

Bliss, E. W. Co., Brooklyn, N. Y.

Ferracute Mach. Co., Bridgeton, N. J.

Hay-Budden Mfg. Co., Brooklyn, N. Y.

Kosberg, Frank Co., Attleboro, Mass.

Richard Mfg. Co., Bloomington, Pa.

Wilson & Smith, Worcester, Mass.

Dog Collars

Union Hardware Co., Torrington, Ct.

Door Bells, See Bells and Gongs**Door Checks and Springs**

Bardley, Jos., 141 151 Baxter St., N. Y.

Larimer Mfg. Co., Latrobe, Pa.

Ogden Mfg. Co., Newark, N. J.

Pullman Sash Balance Co., Rochester, N. Y.

Russell & Erwin Mfg. Co., New York.

Door Holders

Caldwell Mfg. Co., Rochester, N. Y.

Door Screens

Porter Screen Mfg. Co., Burlington, Vt.

Draught Springs

Burditt & Williams, Boston, Mass.

Draw Benches

Richard Mfg. Co., Bloomington, Pa.

Thompson, Hugh L., Waterbury, Ct.

Vulcan Foundry & Machine Co., New Castle, Pa.

Drawing Instruments

Manasse, L. Co., Chicago.

Drawing Stands

Allen, D. H. & Co., Miamisburg, O.

Drill Grinders

Heald, L. S. & Son, Barre, Mass.

Sellers, Wm. & Co., Inc., Phila., Pa.

Washburn Shops of Worcester Polytechnic Inst., Worcester, Mass.

Wilmath & Norman, Grand Rapids, Mich.

Drill Press Work

Straight Mfg. Co., Jamestown, N. Y.

Drilling Machines

Aurora Tool Works, Aurora, Ind.

Baker Bros., Toledo, O.

Barnes, W. F. Co., Rockford, Ill.

Barnes, W. F. & John Co., Rockford, Ill.

Baugh Mch. Tool Co., Springfield, Mass.

Bickford Drill & Tool Co., Cin., Ohio.

Bullard Machine Tool Co., Bridgeport, Ct.

Burnham, Geo. Co., Worcester, Mass.

Champion Blower & Forge Co., Lancaster, Pa.

Cincinnati Mch. Tool Co., Cincinnati, O.

Dallatt, Thos. H. & Co., Philadelphia.

D'Amour & Littlefield Mch. Co., 131 Worth St., N. Y.

Davis, W. P., Machine Co., Rochester, N. Y.

Detrick & Harvey Mch. Co., Baltimore, Md.

Dreses, Mueller & Co., Cincinnati, O.

Fosdick & Holloway Mach. Tool Co., Cincinnati, O.

Gang, Wm. E. Co., Cincinnati, O.

Harrington, E. Son & Co., Phila., Pa.

Hill, Clarke & Co., Boston, Mass.

Hoover Mfg. Co., Freeport, Ill.

Niles Tool Works Co., 136-138 Liberty St., N. Y.

Prentice Bros., Worcester, Mass.

Quint, A. D., Hartford, Conn.

Shuster, F. B. Co., New Haven, Conn.

Sibley & Ware, So. Bend, Ind.

Sigourney Tool Co., Hartford Conn.

Silver Mfg. Co., Salem, O.

Slate, Dwight Machine Co., Hartford, Ct.

Stow Flexible Shaft Co., Phila., Pa.

Wiley & Russell Mfg. Co., Greenfield, Mass.

Woodward & Rogers, Hartford, Conn.

York, S. M. Co., Cleveland, O.

Drilling Machines, Automatic

Gould & Eberhardt, Newark, N. J.

Drive Chains

Locke Steel Belt Co., Bridgeport, Conn.

Drop Forgings

Belden Machine Co., New Haven, Conn.

Billings & Spencer Co., Hartford, Conn.

Cape Ann Tool Co., Pigeon Cove, Mass.

Chicago Drop Forging & Fdry. Co., Kensington, Ill.

Clapp, E. D. Mfg. Co., Auburn, N. Y.

Consolidated Railway Electric Lighting & Equipment Co., 100 Broadway, N. Y.

Eccles, Richard, Auburn, N. Y.

Indianapolis Drop Forging Co., Indianapolis, Ind.

Keystone Drop Forge Co., Philadelphia.

Kiborn & Bishop Co., New Haven, Conn.

Page Storma Drop Forge Co., Chicago Falls, Mass.

R. I. Tool Co., Providence, R. I.

Scranton Forging Co., Scranton, Pa.

Seward, M. & Son Co., New Haven, Ct.

Springfield Drop Forging Co., Springfield, Mass.

Strieby & Poole Co., Newark, N. J.

Tranau & Williams Co., Alliance, O.

Williams, J. H. & Co., Brooklyn, N. Y.

Wyman & Gordon, Worcester, Mass.

Drop Hammers

Billings & Spencer Co., Hartford, Conn.

Merrill Bros., Brooklyn, N. Y.

Williams, White & Co., Moline, Ill.

Drop Presses

Manville, E. J. Mch. Co., Waterbury, Ct.

Miner & Peck Mfg. Co., New Haven, Ct.

Mossberg & Granville Mfg. Co., Providence, R. I.

Vulcan Iron Works, Chicago, Ill.

Dumb Waiters

Energy Elevator Co., Philadelphia, Pa.

Spindel, J. G., Reading, Pa.

Storm Mfg. Co., Newark, N. J.

Variety Machine Co., Warsaw, N. Y.

Dump Cars

Atlas Bolt & Screw Co., Cleveland, O.

Dynamometers and Motors, Electric

Chicago House Wrecking Co., Chicago.

Eddy Electric Mfg. Co., Windsor, Conn.

General Electric Co., Schenectady, N. Y.

Hudson & Van Hook Co., Newark, N. J.

May, M. M. Electric Co., 24 Ave. and 121st St., N. Y.

New England Motor Co., Lowell, Mass.

Stewart Electrical Co., Cincinnati, O.

Sturtevant, B. F. Co., Boston, Mass.

Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.

Zucker & Lovett & Loeb Co., 526-530 W. 25th St., New York.

Eave Troughs

Kanneberg Mfg. Co., Canton, O.

Eave Trough Hangers

Berger Bros. Co., Philadelphia, Pa.

Hearley Variety Variety Iron & Tool Works, Toledo, O.

Oatman Bros., Medina, O.

Edge Tools

Buck, Chas., Millbury, Mass.

Buck Bros., Millbury, Mass.

Ferro-Carbon Castings Co., Phila., Pa.

White, L. & J. J. Co., Buffalo, N. Y.

Egg Beaters

Lyon, Nelson, Albany, N. Y.

Standard Co., Boston, Mass.

Tapiin Mfg. Co., Forestville, Conn.

Egg Opener

Hartman, W. R., Collinsville, Ct.

Electric Bells and Supplies

Hartman, W. R. & Co., 24 Fulton St.

Electric Controllers

Electric Controller & Supply Co., Cleveland, O.

Electric Lighting and Power Apparatus

Ely Electric Mfg. Co., Windsor, Conn.

General Electric Co., Schenectady, N. Y.

Electrical Apparatus

Westinghouse Elec. & Mfg. Co., Pittsburgh, Pa.

Electrical Machinery

Stewart Electrical Co., Cincinnati, O.

Elevators, Wabers of

Eastern Machinery Co., New Haven, Ct.

Energy

Fire Brick

Borgner, Cyrus, Philadelphia, Pa.
Gardner Bros., Cumberland, Md.
Hawa, W. H., Fire Brick Co., Mt. Union,
Maurer, H. & Son, 420 E. 23d, N. Y.
Ostrander Fire Brick Co., Troy, N. Y.
Presbrey Fire Brick Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge,

Fire Extinguishers

International Sprinkler Co., Phila., Pa.

Fire Place Goods

Howes, S. M. Co., Boston, Mass.

Fire Sets

Troy Nickel Works, Troy, N. Y.

Fishing Tackle

Clark, Horrocks & Co., Utica, N. Y.

Fish Rods

Clark Horrocks & Co., Utica, N. Y.

Flanged Fittings

Latrobe Steel Co., Phila., Pa.

Flexible Metallic Tubing

Sharp, Klump & -ason Co., Chicago.

Flexible Shafts

Chicago Flexible Shaft Co., Chicago, Ill.

Flint and Emery Paper

Baeder, Adamson & Co., Phila., Pa.

Floor and Ceiling Plates

Coding Mfg. Co., Bristol, Conn.

Floor Hinge

Lawson Mfg. Co., Milwaukee, Wis.

Flue Cleaners

Jackson Flue Scraper Co., Jackson,

Fly Killers

Higelow, J. F., Worcester, Mass.

Fly Screens

Porter Screen Mfg. Co., Burlington Vt.

Fly Traps

Meyers, Fred. J. Mfg. Co., Hamilton, O.

Foot Rests

Star Heel Plate Co., Newark, N. J.

Forges, Portable, &c.

Bradley Co., Syracuse, N. Y.

Forgings, Iron and Steel

Baker, Jas. H. Mfg. Co., Pittsburgh, Pa.

Forgings, Steel and Cast Iron

Bethlehem Steel Co., S. Bethlehem, Pa.

Forgings, Steel and Cast Iron

Eastern Forge Co., Boston, Mass.

Forgings, Steel and Cast Iron

Frankford Steel Co., Phila., Pa.

Forgings, Steel and Cast Iron

Hay-Budden Mfg. Co., Brooklyn, N. Y.

Forgings, Steel and Cast Iron

Idle Steel Co., Ltd., Cleveland, Ohio.

Forgings, Steel and Cast Iron

Pittsburgh Shear, Knife & Machine Co.,

Forgings, Steel and Cast Iron

Pittsburgh, Pa.

Forgings, Steel and Cast Iron

Titusville Forge Co., Titusville, Pa.

Forgings, Steel and Cast Iron

Continental Tool Co., Frankfort, N. Y.

Forgings, Steel and Cast Iron

Ely Hoe & Tool Co., St. Johnsbury, Vt.

Forgings, Steel and Cast Iron

Iowa Farming Tool Co., Ft. Madison, Ia.

Forgings, Steel and Cast Iron

Terre Haute Shovel & Tool Co., Terre

Forgings, Steel and Cast Iron

Haute, Ind.

Forgings, Steel and Cast Iron

Withington & Cooley Mfg. Co., Jackson

Foundry Facings

Cleveland Facing Mill Co., Cleveland, O.

Foundry Lamps

Obermayer, S. Co., Cincinnati, O.

Foundry Supplies

Forest City Fdy. & Mfg. Co., Cleveland,

Foundry Supplies

Paxson, J. W. Co., Phila., Pa.

Foundry Supplies

Cleveland Facing Mill Co., Cleveland, O.

Foundry Supplies

Gilmour, J., Bennett Building, N. Y.

Foundry Supplies

Obermayer, S. Co., Cincinnati, Ohio.

Foundry Supplies

Osborn Mfg. Co., Cleveland, O.

Foundry Supplies

Paxson, J. W. Co., Phila., Pa.

Four-Head Milling Machines

Ingersoll Milling Machine Co., Rock-

Friction Clutches

Eastern Machinery Co., New Haven, Ct.

Gages

Hess, Snyder & Co., Massillon, O.

Furnaces, Oil, Gas and Coal

Rockwell Engineering Co., 26 Cortlandt

Fuses

Snellen Bickford & Co., Simsbury, Ct.

Gases

Crosby Steam Gage & Valve Co., Boston.

Galvanized Ware

Keen & Hagerty Mfg. Co., Baltimore.

Galvanizing

Blackman & King, 801 Greenwich St.,

Galvanizing Process

U. S. Electro Galvanizing Co., 348 Broad-

Smith & Hemenway Co., 296 Broadway,

Glass Cutting Boards

Lufkin Rule Co., Saginaw, Mich.

Glue

Baeder, Adamson & Co., Phila., Pa.

Gold Goods

Bridgeport Gun Implement Co., 812

Grain Caddies

Young Mfg. Co., St. Louis, Mo.

Grass Catchers

Dayton Grass Catcher Co., Dayton, O.

Grass Snaths

Seymour Mfg. Co., St. Louis, Mo.

Grate Bars

Stowell Mfg. & Fdry. Co., So. Mil-

Grates

Century Mach. & Mfg. Co., Mansfield, O.

Grates, Rocking

Sennett, Geo. B. Co., Youngstown, O.

Grease, Axle

Snow Flake Axle Grease Co., Boston.

Grinding and Polishing Mchs.

American Emery Wheel Works, Providence,

Grinding and Polishing Mchs.

Barnes, W. F. & John Co., Rockford, Ill.

Grinding and Polishing Mchs.

Bealy, Chas. H. & Co., Chicago, Ill.

Grinding and Polishing Mchs.

Brown & Sharpe Mfg. Co., Providence.

Grinding and Polishing Mchs.

Builders Iron Foundry, Providence, R. I.

Grinding and Polishing Mchs.

Cincinnati Milling Mach. Co., Cincinnati,

Grinding and Polishing Mchs.

Gorton, Geo. Mach. Co., Racine, Wis.

Grinding and Polishing Mchs.

Landis Tool Co., Waynesboro, Pa.

Grinding and Polishing Mchs.

Northampton Emery Wheel Co., Leeds,

Grinding and Polishing Mchs.

Mass.

Grinding and Polishing Mchs.

Norton Emery Wheel Co., Worcester,

Grinding and Polishing Mchs.

Ransom, Perry, Oshkosh, Wis.

Grinding and Polishing Mchs.

Safety Emery Wheel Co., Springfield, O.

Grinding and Polishing Mchs.

Springfield Mfg. Co., Bridgeport, Conn.

Grinding and Polishing Mchs.

Tanite Co., Stroudsburg, Pa.

Grinding and Polishing Mchs.

Universal Mach. Co., Providence, R. I.

Grinding and Polishing Mchs.

Wilmarth & Morgan, Grand Rapids

Grinding and Polishing Mchs.

Grindstones, Atlantic Grindstone Co., Providence,

Grinding and Polishing Mchs.

Cleveland Stone Co., Cleveland, O.

Grinding and Polishing Mchs.

Grubbing Machine

Grubbing Machine

New Century Mfg. Co., 43 E. 8th St.,

Grubbing Machine

N. Y.

Gun

Harrington & Richardson Arms Co.,

Gun

Worcester, Mass.

Gun

Johnson, Iver Arms & Cycle Works,

Gun

Fitchburg, Mass.

Gun

Marlin Fire Arms Co., New Haven, Ct.

Gun

Remington Arms Co., 813 Broadway,

Gun

New York

Hack Saws

Disston, Henry & Sons, Inc., Phila., Pa.

Hack Saws

Goodell-Pratt Co., Greenfield, Mass.

Hack Saws

Springfield Machine Screw Co., Spring-

Hack Saws

field, Mass.

Hack Saws

Starrett, L. S. Co., Athol, Mass.

Hack Saws

Hack Saw, Power

Hack Saw, Power

Patterson Tool & Supply Co., Dayton, O.

Hammers

Heller Bros. Co., Newark, N. J.

Hammers

Logan & Strobridge Iron Co., New

Hammers

Brighton, Pa.

Hammers

Robertson, Arthur R., Boston, Mass.

Hammers

Hammocks

Hammers

Palmer, I. E., Middletown, Conn.

Imperial Bit & Snap Co., Racine, Wis.

Hasps and Staples

McKinney Mfg. Co., Allegheny, Pa.

Hatches

Jenkins Iron & Tool Co., Howard, Pa.

Hay Knives

Clark & Parsons Co., E. Wilton, Me.

Hay Tools

Louden Machinery Co., Fairfield Iowa

Hay Tools

Myers, F. E. & Bro., Ashland, O.

Hay Tools

Neuf Mfg. Co., Canton, Ohio.

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Neuf Mfg. Co., Canton, Ohio.

Hay Tools

Machinery

Acme Machinery Co., Cleveland, Ohio.
Adelphi, Geo. E., 100 Liberty St., N. Y.
Ajax Mfg. Co., Cleveland, Ohio.
American Tool Wks. Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Barney, W. F. & John Co., Rockford, Ill.
Bausch & Lomb Tool Co., Springfield, Mass.
Becker-Brainerd Milling Mach. Co., Hyde Park, Mass.
Bliss & W. Co., Brooklyn, N. Y.
Bowling, Geo. H., Cleveland, O.
Briggs, Marvin, 12 Broadway, N. Y.
Brown & Sharpe Mfg. Co., Providence, R. I.
Bullard Mch. Tool Co., Bridgeport, Ct.
Carlin Machinery & Supply Co., Allegheny, Pa.
Carlin's Sons Thos., Allegheny, Pa.
Chicago House Wrecking Co., Chicago, Ill.
Cincinnati Milling Mach. Co., Cin., O.
Cincinnati Planer Co., Cincinnati, O.
Cincinnati Shaper Co., Cincinnati, O.
Conard, T. P., Phila., Pa.
Cook, T. W. G. & Rende St., N. Y.
Cornell, J. B. & J. M., 26th St. and 11th Ave., New York City.
Cowdrey, C. H. Mach. Wks., Fitchburg, Mass.
Davis, W. P. Machine Co., Rochester, N. Y.
Dawson, A. L. & Co., Chicago, Ill.
Dawson & Godwin, Chicago, Ill.
Detrick & Harvey Mch. Co., Baltimore, Md.
Diamond Drill & Mch. Co., Birdsboro, Pa.
Down, J. B. & Co., Chicago, Ill.
Draper Mach. Tool Co., Worcester, Mass.
Du Bois Iron Works, Du Bois, Pa.
Farrel P'dry & Mch. Co., Ansonia, Conn.
Ferracute Machine Co., Bridgeton, N. J.
Fish, H. C. Machine Works, Worcester, Fitchburg Machine Works, Fitchburg, Mass.
Garvin Machine Co., Spring and Varick Sts., N. Y.
General Supply Co., 40 John St., N. Y.
Geometric Drill Co., Westville, Conn.
Gray, Robt. J., 234 E. 13th St., N. Y.
Hannan & Finton, Springfield, Mass.
Hendey Machine Co., Torrington, Conn.
Hill, Henry F., Boston, Mass.
Hill, Clarke & Co., Boston, Mass.
Hilts Maintenance Co., Chicago, Ill.
Johnson, Israel H. Jr. & Co., Phila.
Johnson, Wm. C. & Sons Mch. Co., St. Louis, Mo.
Kaiser, A. V. & Co., Phila., Pa.
Lodge & Shipley Mch. Tool Co., Cin., O.
Lund, S. T., Boston, Mass.
McCabe, J. J., 14 Day Street, N. Y.
McDowell & Co., Pittsburgh, Pa.
McDowell Stocker & Co., Chicago, Ill.
Machinists' Supply Co., Rochester, N. Y.
Manning, Maxwell & Moore, 85-89 Liberty St., N. Y.
Manville, E. J. Mach. Co., Waterbury, Ct.
Marshall & Huchart Mchry. Co., Chicago, Ill.
Mossberg, Frank Co., Attleboro, Mass.
National Machinery Co., Tiffin, Ohio.
New Duty Mfg. Co., Janesville, Wis.
New Haven Mfg. Co., New Haven, Conn.
New York Machinery Depot, 173 Broadway, New York.
Niles Tool Works Co., 133 Liberty St., N. Y.
Nilson, A. H. Mch. Co., Bridgeport, Ct.
Paradox Machinery Co., Chicago, Ill.
Pennsylvania Machine Co., Phila., Pa.
Phila. Machine Tool Co., Phila., Pa.
Pittsburgh Mfg. Co., Pittsburgh, Pa.
Pond Machine Tool Co., Plainfield, N. J.
Poole, Robt. & Son Co., Baltimore, Md.
Porter & Johnston Co., Pawtucket, R. I.
Poulter & Co., Phila.
Pratt & Whitney Co., Hartford, Conn.
Prentiss Bros., Worcester, Mass.
Prentiss Tool & Supply Co., 115 Liberty St., N. Y.
Rafner & Williams, Chicago, Ill.
Rende, Wm. A. & Co., Cleveland, O.
Seyfert's Sons L. F., Philadelphia, Pa.
Sigourney Tool Co., Hartford, Conn.
Silk, Anderson Co., Cincinnati, Ohio.
Standard Machinery & Equipment Co., Cleveland, O.
Thomas & Lowe Machinery Co., Providence, R. I.
Toomey, Frank, Philadelphia, Pa.
Waterbury Farrel Foundry & Mch. Co., Waterbury, Conn.
Wetherill, Robert & Co., Chester, Pa.
Wicks Bros., Pittsburgh, Pa.
Windsor Machine Co., Windsor, Vt.
Wisconsin Machinery Co., Milwaukee, Wis.
Wormer, C. C. Mchry. Co., Detroit, Mich.
York, S. M. Co., Cleveland, O.

Machinery, Wood Working
American Mach'ry Co., Grand Rapids, Mich.
Defiance Machine Wks., Defiance, O.
F. J. A. & Egan Co., Cincinnati, O.

Machinery Springs
Scott, Chas. Spring Co., Phila., Pa.

Machinery Builders
Chapman, J. B. & Co., Springfield, Mass.

Machine Needles
Excelsior Needle Co., Torrington, Ct.

Machine Screws—See Screws, Machine

Machine Screw Work
Spencer Automatic Mch. Screw Co., Hartford, Conn.

Machine Tools—See Machinery

Machine Work
H. B. D. Co., Pittsburgh, Pa.

Machine Wrenches
Billings & Spencer Co., Hartford, Conn.

Machinists' Scales
Starrett, L. S. Co., Col., Mass.

Machinists' Tools and Supplies
Billings & Spencer Co., Hartford, Conn.
General Supply Co., 40 John St., N. Y.
Keweenaw Mfg. Co., Buffalo, N. Y.
King, J. M. & Co., Waterford, N. Y.
Magnetic Separators
Johnson, Geo. V. Co., Phila., Pa.

Manganese Bronze
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Manufacturing Properties
Harrisburg P'dry & Mch. Wks., Harrisburg, Pa.

Millman, J. H. & Co., Pittsburgh, Pa.

Manufacturing Sites
Chicago, Milwaukee & St. Paul R. R., Chicago, Ill.
Southern Railway Co., Washington, D. C.
Wheeling Board of Trade, Wheeling, W. Va.

Mathematical Instruments
Manasse, L. Co., Chicago.

Measuring Machines
Rovers, Jno. M. Box Gauge & Drill Wks., Gloucester City, N. J.

Meat Choppers
Enterprise Mfg. Co. of Pa., Phila., Pa.

Peck, Stow & Wilcox Co., 27 Murray St., New York.
Streeter, N. R. & Co., Rochester, N. Y.
Woodruff, O. D., Pottstown, Pa.

Mechanical Stokers
Century Mach. & Mfg. Co., Mansfield, O.

Metal Brokers
American Metal Co., 32 Broadway, N. Y.

Metals
Hendricks Bros., 42 Cliff St., N. Y.
Hoffeller, Theo. & Co., Buffalo, N. Y.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.
Rutter, A. T., 236 Broadway, N. Y.
United Metals Selling Co., 11 Broadway, N. Y.

Metal Goods Manufacturers
Wright Mfg. Co., Jamestown, N. Y.

Metal Polish
Hoffman, Geo. W., Indianapolis, Ind.

Metal Saws
Vanduyck, J. R., 136 Liberty St., N. Y.

Metal Spinning
Godwin & Kintz Co., Winsted, Conn.

Metal Wheels
Electric Wheel Co., Quincy, Ill.

Milling Machines
Agassiz Co., Dubuque, Iowa.
Becker-Brainerd Milling Machine Co., Hyde Park, Mass.
Brown & Sharpe Mfg. Co., Providence, R. I.
Carter & Hakes Mach. Co., Winsted, Ct.
Cincinnati Milling Mach. Co., Cin., O.
Fox Machine Co., Grand Rapids, Mich.
Garvin Machine Co., Spring and Varick Sts., N. Y.
Ingersoll Milling Mach. Co., Rockford, Ill.
Niles Tool Works Co., 133 Liberty St., N. Y.
Shuster, F. B. Co., New Haven, Conn.
Thurston Mfg. Co., Providence, R. I.

Mining Knives
Hagen & Co. H. & Co., Cincinnati, O.
Kilbourne Mfg. Co., Fair Haven, Vt.

Mining Machinery
Allis, E. P. Co., Milwaukee, Wis.
Rand Drill Co., 123 Broadway, N. Y.

Mining Screens
Harrington & King Perforating Co., Chicago, Ill.
Howard & Morse, 45 Fulton St., N. Y.
Michigan Wire Cloth Co., Detroit, Mich.

Miter Boxes
Smith & Hemmway Co., 296 B'way, N. Y.

Molding Machines
Adams Co., Dubuque, Iowa.
Maywood P'dry & Mch. Co., Chicago, Ill.
Pridmore, Henry E., Chicago, Ill.
Tabor Mfg. Co., Philadelphia, Pa.

Motor Fans
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Motors, Air
Stoddard & Noble Shaft Co., Phila., Pa.

Motors, Electric—See Dynamos and Motors, Electric

Mower Knife Grinders
Pike Mfg. Co., Pike Station, N. H.

Music Wire
Foxon & Guilleaume Carlswerk, Mulheim am Rhein, Germany.

Nail Clippers
Cook, H. C. Co., Ansonia, Conn.

Nail Machinery
Pittsburgh Mfg. Co., Pittsburgh, Pa.

Nail Pullers
Hagen & Co. H. & Co., Troy, N. Y.
Scranton & Co., The New Haven, Conn.
Smith & Hemmway Co., 296 Broadway, N. Y.
Snow, L. T., New Haven, Conn.

Name Plates, Machinery
Becker Name Plate Co., Boston, Mass.
Murdock's Engraving Co., Boston, Mass.

Natural Gas Pumps
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Nickel Platers' Supplies
Eddy Electric Mfg. Co., Windsor, Conn.
Hansen & Van Winkle Co., Newark, N. J.
Zucker & Levet & Loeb Co., 526-530 W. 25th St., New York.

Nickeloid
American Nickeloid Co., Peru, Ill.

Nippers
Schulhorn, Wm. Co., New Haven, Ct.

Norway Shapers
Roland, W. W. & Harvey, Frank, Portland, Philadelphia.

Novelities, Gold and Silver Plated
Benedict M. S. Mfg. Co., E. Syracuse, N. Y.

Nuts—See Bolts

Nuts, Self-Locking
National Elastic Nut Co., Milwaukee, Wis.

Nut Machines
Unihan Nut Co., Unionville, Conn.

Oil Burning Appliances
Rockwell, Engineering Co., 26 Cortlandt St., N. Y.

Oil Extractor
Reed & Curtis Mch. Screw Co., Worcester, Mass.

Oil Heaters—See Oil Stoves

Oil Stones
Pike Mfg. Co., Pike Station, N. H.

Oil Stoves—(See Stoves Oil, Vapor and Gasoline)

Oilers
Bay State Stamping Co., Worcester, Mass.
Gem Mfg. Co., Pittsburgh, Pa.
Hammer & Co., Braintree, Conn.
Stoutenburg Mfg. Co., Keithsburg, Ill.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.

Oilless Bearings
North American Metalline Co., Long Island City, N. Y.

Ore Breakers
Aultman Co., Canton, O.
Cresson, Geo. V. Co., Phila., Pa.

Ores
Blaiss, Reed F. Co., Pittsburgh, Pa.
Schmidt, Frank, Philadelphia, Pa.
Wister, Francis, Philadelphia, Pa.

Ovens, Portable
Budget, G. S. Co., Burlington, Vt.

Ox Shoes
Scranton Forging Co., Scranton, Pa.
Woodruff, Walter W. & Sons, Mt. Carmel, Conn.

Packing
Boston Belting Co., Boston, Mass.
Morrison, Robert, St. Louis, Mo.
Peerless Rubber Mfg. Co., 16 Warren Street, N. Y.

Packing, Iron
Smooth On Mfg. Co., Jersey City, N. J.

Paints
Dixon, Jos. Crucible Co., Jersey City, N. J.
Standard Paint Co., 77-79 John St., N. Y.

Pan's Stretcher
Reed Mfg. Co., West Troy, N. Y.

Patent Solicitors
Go-nel & Wahle, 290 Broadway, N. Y.
Howson & Howson, Philadelphia and Washington.

Stocking, E. B., Washington, D. C.

Patterns
Balkwill Pattern Wks., Cleveland, O.
Buffalo Gear & Pattern Works, Buffalo, N. Y.
Norwalk Pattern & Mfg. Co., So. Norwalk, Conn.

Pattern Letters
Rutler, A. G., 103 Beekman St., N. Y.
Cleveland Galvanizing Works, Cleveland, O.

St. Louis Electrotyping Foundry, St. Louis, Mo.

Pattern Making Machinery
American Mach'ry Co., Grand Rapids, Mich.

Perforated Metal
Clinton Wire Cloth Co., Clinton, Mass.
Erdle & Schenck, Rochester, N. Y.
Harrington & King Perforating Co., Chicago, Ill.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Phosphor Bronze
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N. Y.

Phosphor Wire
Phosphor Bronze Smelting Co., Limited, Philadelphia, Pa.

Phosphor Tin
Phosphor Bronze Smelting Co., Limited, Philadelphia, Pa.

Phosphor Smelting Wks., Syracuse, N. Y.

Picture Wire
Osawatomie Co., Norwich, Conn.

Pig Casting Machines
Heyl & Patterson, Pittsburgh, Pa.

Pig Iron
Alabama Consolidated Coal & Iron Co., Birmingham, Ala.
Cherry Valley Iron Co., Pittsburgh, Pa.
Dimmick, J. K. & Co., Phila., Pa.
Hickman, Williams & Co., Chicago, Ill.
Houston, C. B. & Co., Philadelphia, Pa.
Nicoll, B. Co., 39-61 Wall St., N. Y.
Republic Iron & Steel Co., Chicago, Ill.
Blount, Brown & Co., Cincinnati, O.
Samuel, Frank, Philadelphia, Pa.
Sloss-Sheffield Steel & Iron Co., Birmingham, Ala.
Snyder, W. P. & Co., Pittsburgh, Pa.
Superior Charcoal Iron Co., Grand Rapids, Mich.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
Virginia Iron, Coal and Coke Co., Bristol, Va.—Tenn.

Pig Iron Analysis
Church, S. H., San Francisco, Cal.

Pig Iron Storage
Am. Pig Iron Storage Warehouse Co., 4 Wall St., N. Y.

Pile Drivers
Vulcan Iron Works, Chicago, Ill.

Pincers
Washington Tool Co., Owatonna, Wis.

Pipe, Bent
Harrisburg Pipe Bending Co., Harrisburg, Pa.
National Pipe Bending Co., New Haven, Conn.
National Tube Co., Pittsburgh, Pa.
Whitlock Oil Pipe Co., Hartford, Ct.

Pipe, Cast
Williams, J. H. & Co., Brooklyn, N. Y.

Pipe Cutting and Threading Machines
Bigman & Keeler Mfg. Co., Edwardsville, Ill.
Curtis & Curtis, Bridgeport, Conn.
Jarecki Mfg. Co., Erie, Pa.
McNair & Hain Mfg. Co., N. Y.
Ipsworth, Homer F., Boston, Mass.
Merrill Mfg. Co., Toledo, O.
Saunders' Sons, D., Yonkers, N. Y.

Pipe Fittings
Best Mfg. Co., Pittsburgh, Pa.
Crane Co., Chicago, Ill.
Phosphor Valve Foundry & Construction Co., Pittsburgh, Pa.

Pipe Grins
Prentiss Vise Co., 44 Barclay, N. Y.

Pipes, Fittings, &c.
Jarecki Mfg. Co., Erie, Pa.
McNair & Hain Mfg. Co., N. Y.

Pipes, Riveted Steel
Pollock, W. B. Co., Youngstown, O.
Seafie, Wm. B. & Sons, Pittsburgh, Pa.
Warren City Boiler Works, Warren, O.

Pipe, Water and Gas
National Tube Co., Pittsburgh, Pa.
Red Jacket Mfg. Co., Davenport, Iowa.
S. C. East Iron Pipe & Foundry Co., Phila., Pa.
Wood, R. D. & Co., Philadelphia, Pa.

Piston Rods, Tobin Bronze
Ansonia Brass & Copper Co., 90 John St., N. Y.

Planers
Stanley Rule & Level Co., N. Y.

Planers
Amer. Tool Works Co., Cincinnati, O.
Baird, U. Machinery Co., Pittsburgh, Pa.
Belmer-Eames Tool Co., Cincinnati, O.
Cincinnati Planer Co., Cincinnati, O.
Detrick & Harvey Mch. Co., Baltimore, Md.
Draper Mch. Tool Co., Worcester, Mass.
Pond Machine Tool Co., Plainfield, N. J.
Whitcomb Mfg. Co., Worcester, Mass.
Wilson, W. A., Rochester, N. Y.

Planer Tools
Armstrong Bros. Tool Co., Chicago, Ill.

Plated Ware
International Silver Co., Meriden, Ct.

Plates, Iron and Steel
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Lukens Iron & Steel Co., Coatesville, Pa.
Singer, Nimick & Co., Inc., Pittsburgh, Pa.
Wood, Alan Co., Philadelphia, Pa.

Plate Iron Work
Seafie, Wm. B. & Sons, Pittsburgh, Pa.

Pliers
Bridgeport Mfg. Co., Bridgeport, Conn.
Cronk Hanger Co., Elmira, N. Y.
King, J. M. & Co., Waterford, N. Y.
Morrill, Chas., Broadway and Chambers St., N. Y.
Schulhorn Wm. Co., New Haven, Ct.
Smith & Hemmway Co., 296 B'way, N. Y.

Pneumatic Tools
Phila. Pneumatic Tool Co., Phila., Pa.

Pocket Knives
Catteraugus Cutlery Co., Little Valley, N. Y.
Northfield Knife Co., Northfield, Conn.
Pokers and Lifters
Frederick Works, Troy, N. Y.

Polishing Wheels
Divine Bros. Co., Utica, N. Y.

Portable Track
Atlas Bolt & Screw Co., Cleveland, O.

Post Hole Diggers
Kohler, F. E. & Co., Canton, O.
Parker & Dorsey Mfg. Co., Indianapolis, Ind.

Poultry Fencing
DeKalb Fence Co., DeKalb, Ill.

Poultry Netting
Gilbert & Bennett Mfg. Co., 41 Cliff St., New York.

N. J. Wire Cloth Co., Trenton, N. J.
Tyler, W. S. Co., Cleveland, O.
Wright & Colton Wire Cloth Co., Worcester, Mass.

Power Hack Saws
Hoefler Mfg. Co., Freeport, Ill.
Patterson Tool & Supply Co., Dayton, O.

Power Hammers
Bradley & Co., Boston, Mass.
Bradley Co., Syracuse, N. Y.
Dineit & Eisenhardt, Philadelphia, Pa.
Dubuque Mch. Concern, Dubuque, Ia.
Dupont Mfg. Co., St. Johnsbury, Vt.
Hilbert-Freiberg Mch. Tool Co., Cincinnati, O.
Kidder, R. E., Worcester, Mass.
Long & Alister Co., Hamilton, Ohio.
Mfner & Peck Mfg. Co., New Haven, Ct.
Scranton & Co., The New Haven, Conn.

Power Transmitting Mach'ry
Cresson, Geo. V. Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Norwalk Iron Wks. Co., So. Norwalk, Ct.

Pressed Metal Work
Avery Stamping Co., Cleveland, Ohio.

Presses, Power
Adrian Mach. Works, Brooklyn, N. Y.
Bliss, E. W. Co., Brooklyn, N. Y.
Cook, T. W. G. & Rende St., N. Y.
Cross & Speirs Mch. Co., Waterbury, Ct.
Ferracute Mach. Co., Bridgeton, N. J.
Hibbard, W. H., Brooklyn, N. Y.
Hilles & Jones Co., Wilmington, Del.
Leffler, Chas. & Co., Brooklyn, N. Y.
Manville, E. J. Mch. Co., Waterbury, Ct.
Merriman, A. H., Meriden, Conn.
Mossberg & Granville Mfg. Co., Providence, R. I.

Niagara Machine & Tool Wks., Buffalo, N. Y.
Perkins Machine Co., Boston, Mass.
Phila. Machine Tool Co., Phila., Pa.
Rudolph & Krummel, Chicago, Ill.
Shuster, F. B. Co., New Haven, Conn.

Price Cards and Holders
Menagh, John S., Jersey City, N. J.

Projectiles
National Tube Co., Pittsburgh, Pa.

Pulleys
Amer. Pulley Co., Phila., Pa.
Dodge Mfg. Co., Mishawaka, Ind.
Eastern Machinery Co., New Haven, Ct.
Evans, G. F., Boston, Mass.
Hess, Snyder & Co., Massillon, O.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Keasey Pulley Co., Toledo, O.
Ohio Pulley Co., Marion, O.
Sagunaw Mfg. Co., Sagunaw, Mich.
Woods, T. B. Sons, Chambersburg, Pa.

Pump Chains
Cleveland Galvanizing Works, Cleveland, Ohio.
Garland Chain Co., Rankin Station, Pa.

Pumping Machinery
Cook, A. D., Lawrenceburg, Ind.
Flier & Stowell Co., Milwaukee, Wis.
Goulds Mfg. Co., Seneca Falls, N. Y.
Ingersoll-Sergeant Drill Co., 26 Cortlandt St., N. Y.
Lake City Engineering Co., Erie, Pa.
McGowan, J. H. & Co., Cincinnati, O.
Southwark P'dry & Mch. Co., Philadelphia, Pa.

Pumps
Athol Pump Co., Athol, Mass.
Barnes Mfg. Co., Mansfield, O.
Deming Co., Salem, O.
Edson Mfg. Co., Boston, Mass.
Flint & Walling Co., Kendallville, Ind.
Goulds Mfg. Co., Seneca Falls, N. Y.
Hess, Snyder & Co., Massillon, O.
Humphreys Mfg. Co., Massillon, O.
Myers, F. E. & Bro., Ashland, Ohio.
Red Jacket Mfg. Co., Davenport, Ia.
St. Joseph Pump & Mfg. Co., St. Joseph, Mo.
Wilder, S. & Co., Holliston, Mass.

Punches
Morrill, Chas., Broadway and Chambers St., N. Y.

Punches, Conductors'
Meyers, Fred. J. Mfg. Co., Hamilton, O.
Woodman, R. Mfg. & Supply Co., Boston, Mass.

Punches and Shears, Hand and Power
Bertsch & Co., Cambridge City, Ind.
Bethlehem Foundry & Machine Co., So. Bethlehem, Pa.
Bicknell Hdw. Co., Janesville, Wis.
Bliss, E. W. Co., Brooklyn, N. Y.
Cleveland Punch & Shear Works Co., Cleveland, O.
Heartly Machine Variety Iron & Tool Works, Toledo, Ohio.
Hilles & Jones Co., Wilmington, Del.
Long & Alister Co., Hamilton, Ohio.
Merrick, C. S. & Co., New Haven, Conn.
Newcomb Mfg. Co., Janesville, Wis.
Royersford P'dry & Mch. Co., Royersford, Pa.
Rock River Mach. Co., Janesville, Wis.
Williams, White & Co., Moline, Ill.

Punching and Shearing
Harrington & King Perforating Co., Chicago, Ill.

Push Carts
Syracuse Chilled Plow Co., Syracuse, N. Y.

Pyrometers
Brown, Edward, Phila., Pa.
Uehling, Steinbart & Co., Ltd., Carlsbad, N. J.

Quotation Records
Globe-Wernicke Co., Cincinnati, Ohio.

Railways, Industrial
Hunt, C. W. Co., West New Brighton, N. Y.

Rat and Mouse Traps
Abington Trap Co., Abington, Ill.
Burditt & Williams, Boston, Mass.

Ratchet Drills
Keweenaw Mfg. Co., Buffalo, N. Y.

Ratchets
Chain Stay Fence Co., Sterling, Ill.

Razors
Back Bros., Millbury, Mass.
Cutlery Co., Dubuque, Iowa.
Hackson Knife & Shear Co., Fremont, O.
Kampfe Bros., 2-12 Rende St., N. Y.
Southington Cutlery Co., Southington, Conn.

Razor Hones
Pike Mfg. Co., Pike Station, N. H.

Refracting Gauges
Allen, D. H. & Co., Miamisburg, O.

Reamers
Morse Twist Drill & Mch. Co., New Bedford, Mass.

Recording Gauges
Bristol Co., Waterbury, Conn.
Uehling, Steinbart & Co., Ltd., Carlsbad, N. J.

Reels
Hendryx, A. B. Co., New Haven, Conn.

Refrigerating Machinery
York Mfg. Co., York, Pa.

Refrigerators

Baldwin Refrigerator Co., Burlington, Vt.
Eclipse Refrigerator Wks., Burlington, Vt.
Malne Mfg. Co., Nashua, N. H.
Refrigerator Door Fasteners
Conroy, F. J., Phila., Pa.

Registers

Seaver Mfg. Co., Boston, Mass.
Stowell Mfg. & Foundry Co., So. Milwaukee, Wis.

Relaying Rails

Block-Oilak Iron Co., Chicago, Ill.
Donaldson & Newton, Phila., Pa.
Graut & Williams, Park Row Bldg., N. Y.
Isaac Joseph Iron Co., Cincinnati, O.
May & Spalding, Atlanta, Ga.
Steel & Supply Co., 130 B'way, N. Y.

Relocating Tools

Ideal Mfg. Co., New Haven, Conn.

Repairing Sets, Family

Mitchell, W. R., Chicago, Ill.

Repairing Sets, Farmers'

Imperial Bit & Snap Co., Racine, Wis.

Revolution Counters

Clark, A. B., Machry, Co., Providence, R. I.

Revolvers

Tabor Mfg. Co., Phila., Pa.

Revolving & Richardson Arms Co.

Worcester, Mass.

Rheostats

Electric Controller & Supply Co., Cleveland, Ohio

Rifles

Marlin Fire Arms Co., New Haven, Ct.

Rimfire Arms Co.

Remington Arms Co., 315 B'way, N. Y.

Rivets

Stevens Arms & Tool Co., Chicopee Falls, Mass.

Rivet Machines

Shuster, F. B. Co., New Haven, Conn.

Riveters

Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

Rivets

American Engineering Wks., Chicago, Ill.

Rivets

Phila. Pneumatic Tool Co., Phila., Pa.

Rivets

American Iron & Steel Mfg. Co., Lebanon, Pa.

Rivets

American Screw Co., Providence, R. I.

Rivets

Blake & Johnson, Waterbury, Conn.

Rivets

Burden Iron Co., Troy, N. Y.

Rivets

Clark & Cowles, Plainville, Conn.

Rivets

Cobb & Drew, Plymouth, Mass.

Rivets

Garland Chain & Co., Rankin station, Pa.

Rivets

Lanz, M. & Son, Pittsburgh, Pa.

Rivets

Plymouth Mills, Plymouth, Mass.

Rivets

Rockford Bolt Works, Rockford, Ill.

Rivets

Townsend C. C. & E. F., New Brighton Pa.

Riveting Machines

Bethlehem Foundry & Mch. Co., So. Bethlehem, Pa.

Riveting Machines

Milwaukee Automatic Machine Co., Milwaukee, Wis.

Riveting Machines

Pomeroy & Son, Chicago, Ill.

Riveting Machines

Shuster, F. B. Co., New Haven, Conn.

Riveting Machines

Shepard, Sidney & Co., Buffalo, N. Y.

Riveting Machines

Sheppard, Sidney & Co., Buffalo, N. Y.

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Sheppard, Sidney & Co., Buffalo, N. Y.

Williams, A. C., Ravenna, O.

Safety Razors

Kamph Bros., 8-12 Reade St., N. Y.

Sand Blast Apparatus

Ward, Edgar T. & Sons, Boston, Mass.

Sand Paper

Baeder, Adamson & Co., Phila., Pa.

Sap Spouts

Millar, C. & Son Co., Utica, N. Y.

Sash Balances

Calwell Mfg. Co., Rochester, N. Y.

Sash Balances

Fullman Sash Balance Co., Rochester, N. Y.

Sash Balances

Streeter, N. H. & Co., Rochester, N. Y.

Sash Balances

Smith & Edge Mfg. Co., Bridgeport, Conn.

Sash Balances

Ellis, F. S. & Son, Milldale, Conn.

Sash Balances

Fitch, W. & E. T. Co., The, New Haven, Conn.

Sash Balances

Star Heel Mfg. Co., Newark, N. J.

Sash Balances

Imperial Bit & Snap Co., Racine, Wis.

Sash Balances

Palmer Hardware Mfg. Co., Troy, N. Y.

Sash Balances

Barney & Reed Mfg. Co., Boston, Mass.

Sash Balances

Brown, E. P. & Co., Philadelphia, Pa.

Sash Balances

Enterprise Foundry Co., Cincinnati, O.

Sash Balances

Smith-Warren Co., E. Cambridge, Mass.

Sash Balances

National Specialty Mfg. Co., Phila., Pa.

Sash Balances

Jennings, C. E. & Co., 101 Reade St., N. Y.

Sash Balances

Atkins, E. C. & Co., Indianapolis, Ind.

Sash Balances

Bishop, Geo. H. & Co., Cincinnati, Ohio.

Sash Balances

Diaston, Henry & Sons, Inc., Phila., Pa.

Sash Balances

National Saw Co., Newark, N. J.

Sash Balances

Simch is Mfg. Co., Fitchburg, Mass.

Sash Balances

Vandeyck, J. B., 136 Liberty St., N. Y.

Sash Balances

Diaston, Henry & Sons, Inc., Phila., Pa.

Sash Balances

Ladd, W. C., Bristol, Conn.

Sash Balances

Atkins, E. C. & Co., Indianapolis, Ind.

Sash Balances

Diaston, Henry & Sons, Inc., Phila., Pa.

Sash Balances

Morrill, Chas., Broadway and Chambers St., N. Y.

Sash Balances

Smith & Hemenway Co., 296 B'way, N. Y.

Sash Balances

Taintor Mfg. Co., 9 to 15 Murray, N. Y.

Sash Balances

Atkins, E. C. & Co., Indianapolis, Ind.

Sash Balances

American Cutlery Co., Chicago, Ill.

Sash Balances

Chatillon, John & Sons, 35-39 Cliff St., N. Y.

Sash Balances

Chicago Scale Co., Chicago, Ill.

Sash Balances

Usgood & Sons Co., Binghamton, N. Y.

Sash Balances

Pelouse Scale & Mfg. Co., Chicago, Ill.

Sash Balances

Standard Scale & Supply Co., Pittsburgh, Pa.

Sash Balances

Armstrong, R. S. & Bro., Atlanta, Ga.

Sash Balances

Atlanta Junk Co., Atlanta, Ga.

Sash Balances

Blake, M. J. & M., 11th Ave. and 15th St., N. Y.

Sash Balances

Rotter, C., Hoboken, N. J.

Sash Balances

Cunliffe, R. M., Phila., Pa.

Sash Balances

Green, Thomas A., Brooklyn, N. Y.

Sash Balances

Greiner, F. A., Philadelphia, Pa.

Sash Balances

Hitner, H. A. & Sons, Phila., Pa.

Sash Balances

Infoceller, Theo. & Co., Buffalo, N. Y.

Sash Balances

Kennedy, L. E. & Co., 95 Liberty St., N. Y.

Sash Balances

Leaf, E. B. & Co., Philadelphia, Pa.

Sash Balances

Leonard, John & Co., 22 Broadway, N. Y.

Sash Balances

N. J. Iron & Metal Co., Paterson, N. J.

Sash Balances

Phillips, E. R. & Sons Co., Phila., Pa.

Sash Balances

Rogers, W. H., Bridgeport, Conn.

Sash Balances

Samuels, M. Sons, Brooklyn, N. Y.

Sash Balances

Smith, Morton B. Co., New York.

Sash Balances

Scrapers, Road

Sash Balances

American Steel Scraper Co., Sidney, O.

Sash Balances

Aultman Co., Canton, Ohio.

Sash Balances

Kilbourne & Jacobs Mfg. Co., Columbus, Ohio.

Sash Balances

Sidney Steel Scraper Co., Sidney, O.

Sash Balances

Syracuse Chilled Plow Co., Syracuse, N. Y.

Sash Balances

Harrington & King Perforating Co., Chicago, Ill.

Sash Balances

Screens, Window and Door

Sash Balances

Darby, Edw. & Sons, Philadelphia, Pa.

Sash Balances

Porter Screen Mfg. Co., Burlington, Vt.

Sash Balances

Screw Cutting Attachment

Sash Balances

National Machine Tool Co., Cincinnati, O.

Sash Balances

Screw Cutting Dies

Sash Balances

Card, S. W. Mfg. Co., Mansfield, Mass.

Sash Balances

Carpenter, J. M. Tap & Die Co., Pawtucket, R. I.

Sash Balances

Geometric Drill Co., Westville, Conn.

Sash Balances

Rogers, Jno. M. Bost Gauge & Drill Wks., Gloucester City, N. J.

Sash Balances

Wells Bros. & Co., Greenfield, Mass.

Sash Balances

Wiley & Russell Mfg. Co., Greenfield, Mass.

Sash Balances

Screw Drivers

Sash Balances

Braunsdorf-Mueller Co., Elizabeth, N. J.

Sash Balances

Brown, R. H. & Co., New Haven, Conn.

Sash Balances

Gay, Geo. E., Augusta, Me.

Sash Balances

Goodell-Fratt Co., Greenfield, Mass.

Sash Balances

Mayhew, H. H. Co., Shelburne Falls, Mass.

Sash Balances

New England Specialty Co., No. Easton, Mass.

Sash Balances</

- Steel Importers**
Hobson, Houghton & Co., 96 John St., N. Y.
- Steel Manufacturers**
Jones, B. M. & Co., Boston.
American Steel & Wire Co., Chicago, Ill.
Baker, Hermann & Co., 185 Duane St., New York.
Braeburn Steel Co., Braeburn, Pa.
Canton Steel Co., Canton, Ohio.
Champion Iron & Steel Co., Muskegon, Mich.
Chester Steel Castings Co., Phila., Pa.
Chrome Steel Works, Brooklyn, N. Y.
Crescent Steel Co., Pittsburgh, Pa.
Frankford Steel Co., Philadelphia.
Hawbridge, Brock, Boston, Mass.
Hobson, Houghton & Co., 96 John St., N. Y.
- Steel Mills**
Jesse, Wm. & Sons, Sheffield, England, or 91 John St., New York.
Jones & Laughlins, Ltd., Pittsburgh, Pa.
Kidd Bros. & Burgher Steel Wire Co., McKees Rocks, Pa.
La Belle Steel Co., Pittsburgh, Pa.
Lorain Steel Co., Lorain, Ohio.
Lukens Iron & Steel Co., Coatesville, Pa.
Nash, Geo. & Co., Chicago.
National Steel Co., Battery Park Building, N. Y.
Newark, J. B. & Co., Philadelphia, Pa.
Otis Steel Co., Ltd., Cleveland, Ohio.
Republic Iron & Steel Co., Chicago, Ill.
Rowland, Wm. & Harvey, Frankford, Philadelphia.
Singer, Nimick & Co., Inc., Pittsburgh.
Wardlaw & C. Sheffield, England.
Westmoreland Steel & Mfg. Co., Pittsburg, Pa.
Wilmot & Hobbs Mfg. Co., Bridgeport, Conn.
- Steel Plates**
Ogden & Wallace, 371-353 Greenwich St., New York.
Snyder, W. P. & Co., Pittsburgh, Pa.
Tennessee Coal, Iron & R. R. Co., Birmingham, Ala.
Virginia Iron, Coal and Coke Co., Bristol, Va.-Tenn.
- Steel Self Hardening**
Denman & Davis, 85-87 John St., N. Y.
- Steel Rails**
Lorain Steel Co., Lorain, Ohio.
- Steel Stamps and Stencil Dies**
Kueker, L. A. Stamp Wks., Little Ferry, N. J.
- Steel Tools**
Nash, Geo. M., Jr., 61 Fulton St., N. Y.
Sackman, F. A., Cleveland, O.
Schwerdt & Siebert, Bridgeport, Conn.
- Steel Taps**
Braeburn Steel Co., Braeburn, Pa.
Canton Steel Co., Canton, Ohio.
Crescent Steel Co., Pittsburgh, Pa.
Denman & Davis, 85-87 John St., N. Y.
Frankford Steel Co., Philadelphia, Pa.
Jesse, Wm. & Sons, Sheffield, England, or 91 John St., N. Y.
Jones, B. M. & Co., Boston, Mass.
La Belle Steel Co., Pittsburgh, Pa.
Nash, Geo. & Co., Chicago.
Singer, Nimick & Co., Pittsburgh, Pa.
Westmoreland Steel & Mfg. Co., Pittsburg, Pa.
- Step Ladders**
Handy Ladder Works, Cleveland, O.
American Ladder Co., Cincinnati.
- Step Ladders, Rolling**
Bicycle Step Ladder Co., Chicago, Ill.
Coburn Trolley Truck Mfg. Co., Holyoke, Mass.
- Stamps and Dies**
Milbradt, G. A. & Co., St. Louis, Mo.
Morley Bros., Saginaw, Mich.
- Stamps and Dies**
Card, S. W. Mfg. Co., Mansfield, Mass.
Carpenter, S. M. Tap & Die Co., Pawtucket, R. I.
Curtis & Curtis, Bridgeport, Conn.
Fairbanks Co., 811 Broadway, N. Y.
Hollands Mfg. Co., Erie, Pa.
Jones & Lanson Mch. Co., Springfield, Vt.
- Stamps and Dies**
Jarek Mfg. Co., Erie, Pa.
Oster Mfg. Co., Cleveland, Ohio.
Saunders Sons, D., Yonkers, N. Y.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Stone Cutting Machinery**
Gilmour, J. Bennett Bldg., N. Y.
- Stone Working Machinery**
Patch, F. R. Mfg. Co., Rutland, Vt.
- Stop Screws**
Read, A. P. & Co., Chicago, Ill.
- Store Fixtures**
Warren, J. M. Mfg. Co., Chicago, Ill.
- Storm Window Fasteners**
Woodruff, W. W. & Sons, Mt. Carmel, Ct.
- Store Hardware**
Troy Nickel Works, Troy, N. Y.
- Store Lining**
Ostrander Fire Brick Co., Troy, N. Y.
- Store Pipe Thimbles**
Cheney, S. & Son, Manlius, N. Y.
- Store Trucks**
Arcade Mfg. Co., Freeport, Ill.
Howes, S. M. Co., Boston, Mass.
- Stores, Oil, Vapor and Gasoline**
Damsel Store & Mfg. Co., Cleveland, O.
Novell Mfg. Co., Jackson, Mich.
Schneider & Trenkamp Co., Cleveland, O.
- Stores and Ranges**
Michigan Store Co., Chicago.
- Straightening Machines, Wire and Sheet Metal**
Shuster, F. B. Co., New Haven, Conn.
- Structural Iron and Steel Work**
American Bridge Co., 100 W. Way, N. Y.
Boston Bridge Works, Boston, Mass.
De Bois Iron Works, De Bois, Pa.
Eastern Bridge & Structural Co., Worcester, Mass.
Forest City Steel & Iron Co., Cleveland, Ill.
Means & Fulton Iron Works, Birmingham, Ala.
Moseley Iron Bridge & Roof Co., 89 Cortlandt St., N. Y.
New England Structural Co., Boston.
Phoenix Iron Co., Philadelphia, Pa.
Ritter-Conley Mfg. Co., Pittsburgh, Pa.
Stewart Iron Works, Cincinnati, Ohio.
West Side Foundry Co., Troy, N. Y.
- Sulphuric Acid**
Matheson & Heeler Zinc Co., La Salle, Ill.
- Swaging Machine**
Excelsior Needle Co., Torrington, Ct.
- Swings**
Henley, M. C., Richmond, Ind.
- Switchboard**
McKenna Bros. Brass Co., Ltd., Pittsburgh, Pa.
- Table Ware**
International Silver Co., Meriden, Ct.
- Tacks, Brads, &c.**
Diamond Tack & Nail Works, Raynham, Mass.
Grand Crossing Tack Co., Grand Crossing, Ill.
Milwaukee Tack Co., Milwaukee, Wis.
Plymouth Mills, Plymouth, Mass.
Shelton Co., Birmingham, Conn.
- Tack and Nail Machinery**
Kimball Bros. & Sprague, Brockton, Sweetzer, W. A., Brockton, Mass.
- Tanks, Iron and Steel**
Clarendon Boiler Wks., No. Clarendon, Pa.
Olney & Warrin, 85 Dey St., N. Y.
Scaife, Wm. B. & Sons, Pittsburgh.
- Taps**
Larkin Rule Co., Saginaw, Mich.
- Tap Holder**
Hartford Machine Works, Hartford, Conn.
- Tapping Machines**
Hobbs, Harvey, Bridgeport, Conn.
- Taps and Dies**
Besley, C. H. & Co., Chicago, Ill.
Butterfield & Co., Derby Line, Vt.
Card, S. W. Mfg. Co., Mansfield, Mass.
Carpenter, S. M. Tap & Die Co., Pawtucket, R. I.
Reece, E. F. Co., Greenfield, Mass.
Wells Bros. & Co., Greenfield, Mass.
Wiley & Russell Mfg. Co., Greenfield, Mass.
- Telephones**
Rayson Electric Co., Elvira, Ohio.
- Terne Plate**
American Tin Plate Co., N. Y.
- Thermometers**
Manasse, L. Co., Chicago.
- Thimble Skins**
Mitchell, W. B., Chicago, Ill.
- Time Recorders**
Chicago Time Recorder Co., Chicago, Ill.
Cleveland Register Co., Oberlin, O.
Nash, C. & Co., 127 Duane St., N. Y.
Simplex Time Recorder Co., Gardner, Mass.
- Time Recorders**
Vaggoner Watchman Clock Co., Grand Rapids, Mich.
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Philadelphia Roll & Mch. Co., Phila., Pa.
Phillips, F. R. & Sons Co., Phila., Pa.
- Tinners' Tools and Machines**
Magnum Machine & Tool Works, Buffalo, N. Y.
- Tin Plate**
American Tin Plate Co., N. Y.
Champion Iron & Steel Co., Muskegon, Mich.
- Tin Plate Machinery**
Lloyd Booth Co., Youngstown, Ohio.
- Tinware**
Koen & Hagerty, Baltimore, Md.
Seamless Metal Ware Co., 277 Broadway, N. Y.
- Tinware Machinery**
Shuster, F. B. Co., New Haven, Conn.
- Tobin Bronze**
Ansonia Brass & Copper Co., 90 John St., N. Y.
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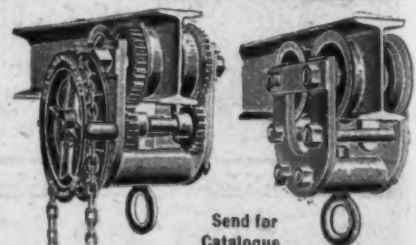
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